

Android Tutorial

"The only true wisdom is in knowing you know nothing."

— Socrates

Manjunath.R

#16/1, 8th Main Road, Shivanagar, Rajajinagar, Bangalore560010, Karnataka, India

*Corresponding Author Email: manjunath5496@gmail.com

*Website: <http://www.myw3schools.com/>

- Educational institutions are teaching it
- Corporate societies are employing it
- Pupils need it
- (Pedagogues desire it... ;)
- (Coders perceive it... :)

The **Android** (a mobile operating system based on a modified version of the Linux kernel) which was developed by the Open Handset Alliance, led by Google, and other companies – and has now garnered the interest of a million smartphone users. This book is for all android developers, whether you are a novice or an experienced pro. The beginner will find its carefully paced discussions and many examples especially helpful. Of course those who have already familiar with android programming are likely to derive more benefits from this book. After completing this book you will find yourself at a moderate level of expertise in Android programming from where you can take yourself to next levels.

Contents

Java Programming	1
Android	109

"Remember that code is really the language in which we ultimately express the requirements. We may create languages that are closer to the requirements. We may create tools that help us parse and assemble those requirements into formal structures. But we will never eliminate necessary precision—so there will always be code."

— Robert C. Martin

Java Programming Language

Paradigm	Multi-paradigm: generic, object-oriented (class-based), imperative, reflective
Designed by	James Gosling
Developer	Sun Microsystems
First appeared	May 23, 1995; 25 years ago
Stable release	Java SE 14 / March 17, 2020; 2 months ago
Typing discipline	Static, strong, safe, nominative, manifest
Filename extensions	.java, .class, .jar
Website	oracle.com/java/

Influenced by

CLU, Simula67, LISP, SmallTalk, Ada 83, C++, C#, Eiffel, Mesa, Modula-3, Oberon, Objective-C, UCSD Pascal, Object Pascal

Influenced

Ada
2005, BeanShell, C#, Chapel, Clojure, ECMAScript, Fantom, Gambas, Groovy, Hack, Haxe, J#, Kotlin, PHP, Python, Scala, Seed7, Vala

Java is one of the most used programming languages used in the development of virus-free systems [because:

- No explicit pointer
- Java Programs run inside a virtual machine sandbox

] and a open-source and free high level programming language and a computing platform for application development conceived by **James Gosling**, Patrick Naughton, Chris Warth, Ed Frank, and Mike Sheridan at Sun Microsystems, Inc. in 1991 to create programs to control consumer electronics (**which is now a subsidiary of Oracle Corporation**) and released in 1995, runs on a variety of platforms, such as Windows, Mac OS, and the various versions of UNIX, used in internet programming, mobile devices, games, *e-business solutions* etc., because of its **reliability**, high performance, simplicity and easy to use and **quick to learn** and rigid versus extensibility. Since Java has a runtime environment (JRE) and API, it is called a platform. As a language that has the Object-Oriented feature, Java supports:

- Polymorphism
- Inheritance
- Encapsulation
- Abstraction
- Classes
- Objects
- Instance
- Method
- Message Passing

Advantages:

- Object Oriented
- Platform Independent
- Simple

- Dynamic
- Secure
- Multi-threaded
- Architecture-neutral
- Portable
- Robust

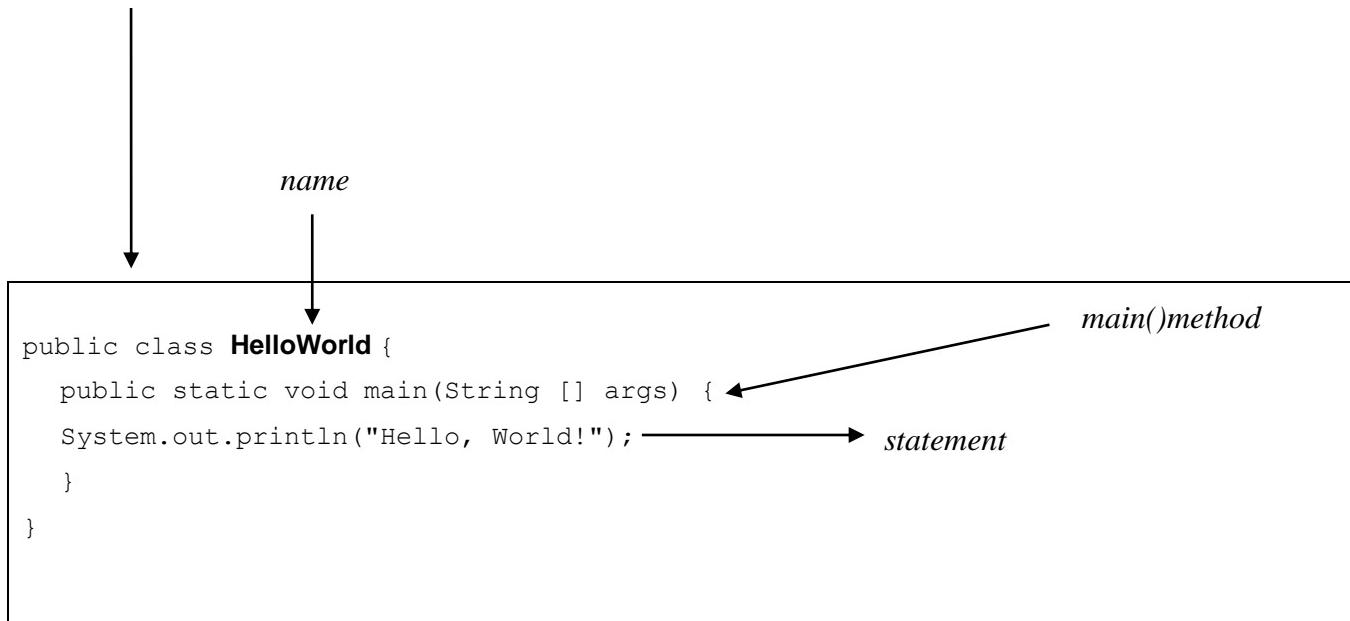
Types of Java Applications:

- Standalone Application
- Web Application
- Enterprise Application
- Mobile Application

Java Language Keywords

abstract	continue	for	new	switch
assert	default	goto	package	synchronized
boolean	do	if	private	this
break	double	implements	protected	throw
byte	else	import	public	throws
case	enum	instanceof	return	transient
catch	extends	int	short	try
char	final	interface	static	void
class	finally	long	strictfp	volatile
const	float	native	super	while

text file named HelloWorld.java



- Declare a class with name **HelloWorld**.
- Declare the main method `public static void main(String args[])`
- Now Type the `System.out.println("Hello, World!");` which displays the text Hello World.

Process of Java program execution:

A Java program:

```
public class HelloWorld {
    public static void main(String [] args) {
        System.out.println("Hello, World!");
    }
}
```

is written using Text Editor , such as [**NotePad++**, Notepad] and saved with [*.java*] Extension.
File Saved with [*.java*] extension is called **Source Program** or Source Code.

```
// HelloWorld.java

public class HelloWorld {
    public static void main(String [] args) {
        System.out.println("Hello, World!");
    }
}

/* Because the class name is HelloWorld the source file should be named as
HelloWorld.java */
```

and sent to the ***java compiler*** (i.e., *javac compiler*) where the source program is compiled i.e., the program is entirely read and translated into Java byte codes (but not into **machine language**). If the ***javac compiler*** finds any error during compilation, it provides information about the error to the programmer. The programmer has to review code and check for the solution. And if there are no errors the translated program (i.e., java byte codes – a highly optimized set of instructions) is stored in computers main memory as ***HelloWorld.class*** and since the java byte codes cannot be trusted to be correct. Therefore before execution they are verified and converted to machine level language i.e., machine code sequence of 0s and 1s by Java run-time system, which is called the ***Java Virtual Machine*** (JVM) and is executed by a Java interpreter and

```
Hello, World!
```

is displayed on the console screen.

```
// Comment on one line

/* Comment on one or
```

```
More lines */

/** Documentation comment */
```

JVM (Java Virtual Machine) resides under RAM (**Random Access Memory** – the stuff that boosts up your computer to run faster and allows your computer to perform many tasks at the same time) and **JVM** comprises:

- **Class Loader:** it loads .class file that contains Java byte codes.
- **Byte Code Verifier:** it verifies byte codes.
- **Execution Engine:** it translates java byte codes to machine codes and executes them.

In the statement:

```
public class HelloWorld
```

The word "HelloWorld" implies: name of the class is **HelloWorld** and this class is public. public means that the class HelloWorld can be accessed by any other class in any package.

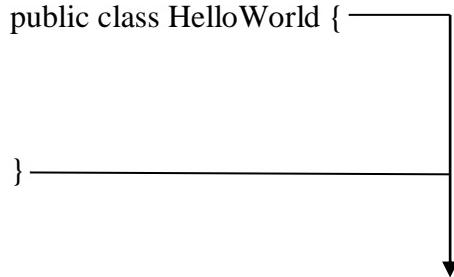
In the program:

```
public class HelloWorld {

    /* This is my first java program.
     * This will print 'Hello, World!' as the output
     */

    public static void main(String [] args) {
        System.out.println("Hello, World!"); // prints Hello, World!
    }
}
```

```
}
```



imply the body of the class HelloWorld (Here: the curly brace '{' imply the beginning of the class and the curly brace '}' imply the end of the class) within which the **main method**

```
public static void main(String [] args) {  
}  
}
```

is written. All method names should start with a Lower Case letter. For all class names the first letter should be in Upper Case.

Java program processing starts from the `main()` method which is a mandatory part of every Java program.

`public static void main(String [] args)` → **main method** (a collection of statements or methods like `System.out.println()` that are grouped together to perform an operation) and this **main method** is *public*

and

```
{
```

} imply the body of the main method

(Here: the curly brace

```
{
```

imply the beginning of the main method and the curly brace

```
}
```

imply the end of the *main method*) within which the statement:

```
System.out.println("Hello, World!");
```

is written and executed.

- main method in java *functions* like main function `main()` in C and C++.

If the statement:

```
public class HelloWorld
```

is replaced by the statement:

public class sample i.e.,

```
public class sample {  
    public static void main(String [] args) {  
        System.out.println("Hello, World!");  
    }  
}
```

Then the error will be displayed on the console screen because the program written in **notepad** is saved as **HelloWorld.java** not as **sample.java**. Name of the program file should exactly match the class name. When saving the file, you should save it using the class name and append '.java' to the end of the name.

Like C and C++, Java is also a case sensitive language i.e., capital letters (or **upper case letters**) must be avoided to prevent the display of error on the screen. **For example:** If the statement:

```
PUBLIC static void main(String [] args)
```

is written instead of the statement:

```
public static void main(String [] args)
```

, compilation Error will be displayed on the screen.

Each code statement must end with a semicolon. If we forget to end each **program statement** within the body of main method with a **semicolon** (";") – Error will be displayed on the screen.

The program begins its execution with the method:

```
public static void main(String [] args)
```

the main method – the **entry point** of the program execution i.e., the point from where the execution of Java program begins.

In the statement:

```
System.out.println();
```

- **System** → name of a standard class that contains variables and methods for supporting simple keyboard and character output to the display.
- **out** → represents the standard output stream

- **println()** → output method of the Java language which makes provision to print the output in the next line:

```
Hello,world!
```

on the screen.

The text **Hello,world!** should be enclosed by the double quotation marks (" ") and should be written within the println method and this **println method** should be ended with the semicolon i.e.,

```
System.out.println("Hello,world!");
```

Otherwise the **compilation error** will be displayed on the console screen.

```
public class HelloWorld {  
    public static void main(String [] args) {  
        System.out.println("Hello, World!");  
        System.out.println("Hello, World!");  
    }  
}
```

Output on the screen:

Hello, World!

Hello, World!

```
public class HelloWorld {  
    public static void main(String [] args) {  
        System.out.print("Hello, World!");  
        System.out.print("Hello, World!");  
    }  
}
```

```
}
```

```
}
```

Output on the screen:

```
Hello, World!Hello, World!
```

In the statement:

```
public static void main(String [] args)
```

- **public** → implies: this method can accessed from anywhere outside the class **HelloWorld**

If the word "**public**" in the statement:

```
public static void main(String [] args)
```

is replaced by the word

private

or

protected

Then compilation error will be flagged on the screen because if the method is declared private or protected then this method does not make itself available to **JVM** for execution.

- **main** → implies the name of the method
- **static** means the main method is the part of the class **HelloWorld**

Why static?

Because the program execution begins from the main method and if the main method is not declared static then the execution of the program does not take place.

- void → implies the main method does not return any value i.e., **main method** return nothing when it completes execution.
- String args [] → While running the program if we want to pass something to the main method, then this parameter is used as the way of taking input from the user – so we can pass some strings while running the program if we want.

Moreover, **JVM** cannot recognize the method:

```
public static void main(String [] args)
```

as method if the parameter String [] args is not included.

If the word args in the statement: public static void main(String [] args) is replaced by another word say *jamesgosling* or *java*

i.e.,

```
public class HelloWorld
{
    public static void main(String [] jamesgosling)
    {
        System.out.println("Hello, World!");
    }
}

public class HelloWorld {
    public static void main (String [] java) {
```

```
System.out.println("Hello, World!");  
}  
}  
}
```

No error will be displayed on the screen i.e.,

```
Hello,world!
```

will be displayed on the console screen.

If the statement:

```
public static void main(String [] args)
```

is replaced by the statement `public static void main(String [])` – Then the error is displayed on the screen.

Most Java programmers prefer args and argv i.e., the statements:

- `public static void main(String [] args)`
- `public static void main(String [] argv)`

are preferred.

If the space is left between the words Hello and World i.e., if the statement:

```
public class Hello    World
```

is written instead of the statement:

```
public class HelloWorld
```

Then the ***compilation error*** will be displayed on the console screen.

Java Modifiers



- **Access Modifiers** – default, public, protected, private
- **Non-access Modifiers** – final, abstract, strictfp

Java Variables

- 
- Local Variables
 - Class Variables (**Static Variables**)
 - Instance Variables (**Non-static Variables**)

Java String Methods

Method	Description	Return Type
<u>charAt()</u>	Returns the character at the specified index (position)	char
<u>codePointAt()</u>	Returns the Unicode of the character at the specified index	int
<u>codePointBefore()</u>	Returns the Unicode of the character before the specified index	int

<u>codePointCount()</u>	Returns the Unicode in the specified text range of this String	int
<u>compareTo()</u>	Compares two strings lexicographically	int
<u>compareToIgnoreCase()</u>	Compares two strings lexicographically, ignoring case differences	int
<u>concat()</u>	Appends a string to the end of another string	String
<u>contains()</u>	Checks whether a string contains a sequence of characters	boolean
<u>contentEquals()</u>	Checks whether a string contains the exact same sequence of characters of the specified CharSequence or StringBuffer	boolean
<u>copyValueOf()</u>	Returns a String that represents the characters of the character array	String
<u>endsWith()</u>	Checks whether a string ends with the specified character(s)	boolean
<u>equals()</u>	Compares two strings. Returns true if the strings are equal, and false if not	boolean
<u>equalsIgnoreCase()</u>	Compares two strings, ignoring case considerations	boolean
<u>format()</u>	Returns a formatted string using the specified locale, format string, and arguments	String
<u>getBytes()</u>	Encodes this String into a sequence of bytes using the named charset, storing the result into a new byte array	byte[]
<u>getChars()</u>	Copies characters from a string to an array of chars	void
<u>hashCode()</u>	Returns the hash code of a string	int
<u>indexOf()</u>	Returns the position of the first found occurrence of specified characters in a	int

	string	
<code>intern()</code>	Returns the index within this string of the first occurrence of the specified character, starting the search at the specified index	String
<code>isEmpty()</code>	Checks whether a string is empty or not	boolean
<code>lastIndexOf()</code>	Returns the position of the last found occurrence of specified characters in a string	int
<code>length()</code>	Returns the length of a specified string	int
<code>matches()</code>	Searches a string for a match against a regular expression, and returns the matches	boolean
<code>offsetByCodePoints()</code>	Returns the index within this String that is offset from the given index by codePointOffset code points	int
<code>regionMatches()</code>	Tests if two string regions are equal	boolean
<code>replace()</code>	Searches a string for a specified value, and returns a new string where the specified values are replaced	String
<code>replaceFirst()</code>	Replaces the first occurrence of a substring that matches the given regular expression with the given replacement	String
<code>replaceAll()</code>	Replaces each substring of this string that matches the given regular expression with the given replacement	String
<code>split()</code>	Splits a string into an array of substrings	String[]
<code>startsWith()</code>	Checks whether a string starts with specified characters	boolean
<code>subSequence()</code>	Returns a new character sequence that is	CharSequence

	a subsequence of this sequence	
substring()	Extracts the characters from a string, beginning at a specified start position, and through the specified number of character	String
toCharArray()	Converts this string to a new character array	char[]
<u>toLowerCase()</u>	Converts a string to lower case letters	String
toString()	Returns the value of a String object	String
<u>toUpperCase()</u>	Converts a string to upper case letters	String
<u>trim()</u>	Removes whitespace from both ends of a string	String
valueOf()	Returns the primitive value of a String object	String

Java Math Methods

Method	Description	Return Type
abs(x)	Returns the absolute value of x	double float int long
acos(x)	Returns the arccosine of x, in radians	double
asin(x)	Returns the arcsine of x, in radians	double
atan(x)	Returns the arctangent of x as a numeric value between -PI/2 and PI/2 radians	double
atan2(y,x)	Returns the angle theta from the conversion of rectangular coordinates (x, y) to polar coordinates (r, theta).	double
cbrt(x)	Returns the cube root of x	double
ceil(x)	Returns the value of x rounded up to its nearest integer	double
copySign(x, y)	Returns the first floating point x with the	double

	sign of the second floating point y	
cos(x)	Returns the cosine of x (x is in radians)	double
cosh(x)	Returns the hyperbolic cosine of a double value	double
exp(x)	Returns the value of E ^x	double
expm1(x)	Returns e ^x - 1	double
floor(x)	Returns the value of x rounded down to its nearest integer	double
getExponent(x)	Returns the unbiased exponent used in x	int
hypot(x, y)	Returns sqrt(x ² + y ²) without intermediate overflow or underflow	double
IEEEremainder(x, y)	Computes the remainder operation on x and y as prescribed by the IEEE 754 standard	double
log(x)	Returns the natural logarithm (base E) of x	double
log10(x)	Returns the base 10 logarithm of x	double
log1p(x)	Returns the natural logarithm (base E) of the sum of x and 1	double
max(x, y)	Returns the number with the highest value	double float int long
min(x, y)	Returns the number with the lowest value	double float int long
nextAfter(x, y)	Returns the floating point number adjacent to x in the direction of y	double float
nextUp(x)	Returns the floating point value adjacent to x in the direction of positive infinity	double float
pow(x, y)	Returns the value of x to the power of y	double
random()	Returns a random number between 0 and 1	double
round(x)	Returns the value of x rounded to its nearest integer	int
rint()	Returns the double value that is closest to x and equal to a mathematical integer	double
signum(x)	Returns the sign of x	double
sin(x)	Returns the sine of x (x is in radians)	double
sinh(x)	Returns the hyperbolic sine of a double value	double
sqrt(x)	Returns the square root of x	double
tan(x)	Returns the tangent of an angle	double
tanh(x)	Returns the hyperbolic tangent of a double	double

	value	
toDegrees(x)	Converts an angle measured in radians to an approx. equivalent angle measured in degrees	double
toRadians(x)	Converts an angle measured in degrees to an approx. angle measured in radians	double
ulp(x)	Returns the size of the unit of least precision (ulp) of x	double float

- All Math methods are **static**.

Data Type	Size	Description
byte	1 byte	Stores whole numbers from -128 to 127
short	2 bytes	Stores whole numbers from -32,768 to 32,767
int	4 bytes	Stores whole numbers from -2,147,483,648 to 2,147,483,647
long	8 bytes	Stores whole numbers from -9,223,372,036,854,775,808 to 9,223,372,036,854,775,807
float	4 bytes	Stores fractional numbers. Sufficient for storing 6 to 7 decimal digits
double	8 bytes	Stores fractional numbers. Sufficient for storing 15 decimal digits
boolean	1 bit	Stores true or false values
char	2 bytes	Stores a single character/letter or ASCII values

- **Program 1.1**

Java program to print the word "hello Bill Gates" on screen

```
public class HelloWorld {  
    public static void main (String [] args) {  
        System.out.println("hello Bill Gates");  
    }  
}
```

The output on the screen:

```
hello Bill Gates
```

- **Program 1.2**

Java program to print the word " ****hello silicon city**** " on screen

```
public class HelloWorld {  
    public static void main(String [] args) {  
        System.out.println(" ****hello silicon city**** ");  
    }  
}
```

The output on the screen:

```
****hello silicon city****
```

- **Program 1.3**

Java program to print

*

on screen

```
public class HelloWorld {  
    public static void main(String [] args) {  
        System.out.println("\n      *   ");  
        System.out.println("\n     ***** ");  
        System.out.println("\n     ***** ");  
        System.out.println("\n     ***** ");  
        System.out.println("\n     ***** ");  
    }  
}
```

The output on the screen:

*

If new line \n is not included in the above program then the output on the screen is:

- Write a program to print the following outputs:

(a)

```
*  
***  
**java**  
***
```

(b)

```
*****  
* *  
* Hello World! *  
* *  
*****
```

(c)

```
Braces come in pairs!  
Comments come in pairs!  
All statements end with a semicolon!  
Spaces are optional!  
Must have a main method!  
java is done mostly in lowercase. Like C & C++ it's also a case-sensitive language
```

Answers:

a)

```
public class HelloWorld {  
    public static void main (String [] args) {  
        System.out.println("\n        *      ");  
        System.out.println("\n        ****   ");  
        System.out.println("\n        **java** ");  
        System.out.println("\n        ****   ");  
        System.out.println("\n        *      ");  
    }  
}
```

b)

```
public class HelloWorld {  
    public static void main (String [] args) {  
        System.out.println("\n        *****      ");  
        System.out.println("\n        * *      ");  
        System.out.println("\n        * Hello World! *      ");  
        System.out.println("\n        * *      ");  
        System.out.println("\n        *****      ");  
    }  
}
```

c)

```
public class HelloWorld {  
    public static void main (String [] args) {  
        System.out.println("\n Braces come in pairs!");  
        System.out.println("\n Comments come in pairs!");  
        System.out.println("\n All statements end with a semicolon!");  
        System.out.println("\n Spaces are optional!");
```

```
System.out.println("\n Must have a main method!");
System.out.println("\n java is done mostly in lowercase. Like C & C++ it's also a case-
sensitive language");
}
}
```

- **Program 1.4**

Java program to find the area of the circle

```
public class HelloWorld {
    public static void main (String [] args) {
        int r, area;
        r = 2;
        area = 3.14 * r * r;
        System.out.println("The area of the circle = " + area);
    }
}
```

The output on the screen:

The area of the circle = 12

In **C language**, the statement:

```
printf("The area of the circle = %d ", area);
```

make the provision to print the output on the screen.

In **C++ language**, the statement

```
cout<<"The area of the circle = "<< area;
```

make the provision to print the output on the screen.

whereas in the **Java language**, the statement:

```
System.out.println("The area of the circle = " + area);
```

make the provision to print the output on the screen.

In the statement:

```
System.out.println("The area of the circle = " + area);
```

There are two strings:

- The area of the circle =
- area

plus operator (+) functions as the concatenation operator (concatenation means connecting two statements to produce a single statement) – which (here) concatenates the string:

```
"The area of the circle = "
```

and the string:

```
"area (which is 3.14 * r * r (= 12 since r = 2))"
```

producing a String statement:

```
The area of the circle = 12
```

which will be displayed on the screen as the result.

Even though if we write `ARGS` instead of `args` i.e., even though if we express `args` in capital letter, `No error` will be displayed on the screen.

```
public static void main(String [] ARGS) → no error will be displayed on the console  
screen
```

Operator	Name	Description	Example
+	Addition	Adds together two values	<code>x + y</code>
-	Subtraction	Subtracts one value from another	<code>x - y</code>
*	Multiplication	Multiplies two values	<code>x * y</code>
/	Division	Divides one value by another	<code>x / y</code>
%	Modulus	Returns the division remainder	<code>x % y</code>
++	Increment	Increases the value of a variable by 1	<code>++x</code>
--	Decrement	Decreases the value of a variable by 1	<code>--x</code>

- **Program 1.5**

Java program to find the circumference of the circle

```
public class HelloWorld {  
    public static void main (String [] args) {  
        float r, circumference;  
        r = 2;  
        circumference = 2 * 3.14 * r;  
        System.out.println("The circumference of the circle = " + circumference);  
    }  
}
```

The output on the screen is:

```
The circumference of the circle = 12.57
```

- **What will be the output of the following programs:**

a)

```
public class HelloWorld {  
    public static void main (String [] args) {  
        double l, b, area;  
        l=2;  
        b=2.5;  
        area = l*b;  
        System.out.println("The area of the rectangle = " + area);  
    }  
}
```

Answer:

The area of the rectangle = 5.0

b)

```
public class HelloWorld {  
    public static void main (String [] args) {  
        int a, b, c;  
        a= 3;  
        b=3;  
        c=3;  
        if ((a + b< c) || (b + c < a) || (a==b && b==c))  
            System.out.println(" the triangle is equilateral");  
        else  
            System.out.println(" the triangle is not possible");  
    }  
}
```

Answer:

the triangle is equilateral

- **Program 1.6**

Java program to convert the temperature in Celsius to Fahrenheit

```
public class HelloWorld{  
    public static void main(String [] args){  
        float C, F;  
        C=38.5;
```

```
F = 9*C/5 +32;  
System.out.println("temperature in Fahrenheit= " +F);  
}  
}
```

The output on the screen:

temperature in Fahrenheit= 101.3

- **Program 1.7**

Java program to find the sum of two numbers

```
public class HelloWorld  
{  
    public static void main(String [] args)  
    {  
        int a, b, sum;  
        a=1;  
        b=2;  
        sum = a + b;  
        System.out.println("the sum of a and b = " + sum);  
    }  
}
```

The output on the screen:

the sum of a and b = 3

If you want to supply the values **for a** and **b** through the **key board**, then we have to rewrite the program as follows:

```
import java.util.Scanner;
public class HelloWorld
{
    public static void main(String [] args) {
        int a, b, sum;
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter any two Numbers: ");
        a = scan.nextInt();
        b = scan.nextInt();
        sum = a + b;
        System.out.println("the sum of a and b = " + sum);
    }
}
```

The output on the screen:

Enter any two Numbers:
If you enter two numbers 2 and 3
the sum of a and b = 5
will be outputted on the screen

Scanner is a class found in ***java.util package***. So to use Scanner class, we first need to include:

java.util package

in our program.

```
import java.util.Scanner; // This will import just the Scanner class
import java.util.*; // This will import the entire java.util package
```

The statement:

```
Scanner scan = new Scanner(System.in);
```

implies: declaring an object of the **Scanner** class "scan" to read the values entered for **a** and **b** through the key board. And the statements:

```
a = scan.nextInt();
b = scan.nextInt();
```

imply: scan is an object of Scanner class and **nextInt()** is a method of the object "scan" that allows the object "scan" to read only integer values from the keyboard.

- **nextInt()** that allows the object "scan" to read only integer values from the keyboard, **methods** that allows the object "scan" to read other data types from the **keyboard** are listed below:

Methods	Datatype
nextInt()	Integer
nextFloat()	Float
nextDouble()	Double
nextLong()	Long
nextShort()	Short
next()	Single word
nextLine()	Line of Strings
nextBoolean()	Boolean

- **Program 1.8**

Java program to find the square root of a number

i)

```
public class HelloWorld
{
    public static void main(String [] args) {
        float x;
        x = 233;
        System.out.println(" square root of a number = " + Math.sqrt(x));
    }
}
```

The output on the screen:

```
square root of a number = 15.264
```

If you want to supply the value for **x** through the **key board**, then the above program should take the form:

```
import java.util.Scanner;
public class HelloWorld {
    public static void main(String [] args) {
        int x;
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter any Number: ");
        x = scan.nextFloat();
        System.out.println(" square root of a number = " + Math.sqrt(x));
    }
}
```

The output on the screen:

```
Enter any Number:
```

```
If you enter the number 233
```

square root of a number = 15.264337522

will be outputted on the screen.

ii)

```
public class HelloWorld
{
    public static void main(String [] args) {
        double x;
        x = 233;
        System.out.println(" square root of a number = " + Math.sqrt(x));
    }
}
```

The output on the screen:

square root of a number = 15.264337522473747

If you want to supply the value for **x** through the **key board**, then the above program should take the form:

```
import java.util.Scanner;
public class HelloWorld {
    public static void main(String [] args) {
        double x;
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter any Number: ");
        x = scan.nextDouble();
        System.out.println(" square root of a number = " + Math.sqrt(x));
    }
}
```

The output on the screen:

```
Enter any Number:  
If you enter the number 233  
square root of a number = 15.264337522473747  
will be outputted on the screen.
```

- **Program 1.9**

What will be the output of the following program:

```
public class HelloWorld{  
    public static void main(String[] args) {  
        char c;  
        c = 'A';  
        System.out.println("ch= " + c);  
    }  
}
```

The output on the screen:

ch=A

If you want to supply the value for **c** through the **key board**, then the above program should take the form:

```
public class HelloWorld {  
    public static void main(String[] args) throws Exception {  
        char c;  
        System.out.print("Enter a character:");
```

```
c = (char)System.in.read();
System.out.println("ch= " + c);
}
```

The output on the screen:

Enter a character:

If you enter the character K

ch= K

will be outputted on the screen.

- **Note:** Exception is a problem that arises during the execution of a program. When an exception occurs, program abnormally terminates and disrupts – throws Exception should be written after the statement `public static void main(String[] args)` so that the exceptions are thrown to the **operating system** to handle and the program will be successfully executed and the output will be displayed on the screen.

- **Program 2.0**

```
import java.util.Scanner;
public class HelloWorld {
public static void main(String [] args) {
String m;
Scanner in = new Scanner(System.in);
System.out.print("Enter the word: ");
m = in.nextLine();
System.out.println(" the word you entered = " + m);
}
}
```

The output on the screen:

Enter the word:

If you enter the word dog

the word you entered = dog

will be outputted on the screen.

If the statement:

```
m = scan.nextLine();
```

is written instead of

```
m = in.nextLine();
```

Then we have to replace the statement:

```
Scanner in = new Scanner(System.in);
```

by the statement:

```
Scanner scan = new Scanner(System.in);
```

Otherwise *compilation error* will be displayed on the console screen.

▪ What is the mistake in the following program:

```
public class HelloWorld
{
    static public void main(String args [])
    {
        float x;
        x = 233;
        System.out.println(" cube root of a number = " + Math.cbrt(x));
```

```
}
```

```
}
```

Answer:

There is no mistake in the above program.

The statement:

```
public static void main(String[] args)
```

can also be written as:

```
static public void main(String args [])
```

The output on the screen is:

cube root of a number = 6.1534494936636825

- **Program 2.1**

Java program to find the product of two numbers.

```
public class HelloWorld{  
    public static void main(String [] args) {  
        int a, b, product;  
        a=1;  
        b=2;  
        product = a * b;  
        System.out.println("the product of a and b = " + product);  
    }  
}
```

The output on the screen:

```
the sum of a and b = 2
```

If you want to supply the values *for a* and *b* through the **key board**, then we have to rewrite the above program as follows:

```
import java.util.Scanner;
public class HelloWorld {
    public static void main(String [] args) {
        int a, b, product;
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter any two Numbers: ");
        a = scan.nextInt();
        b = scan.nextInt();
        product = a * b;
        System.out.println("the product of a and b = " + product);
    }
}
```

The output on the screen:

```
Enter any two Numbers:
If you enter two numbers 6 and 3
the product of a and b = 18
will be outputted on the screen
```

If you want to assign the **floating point values** *for a* and *b*, then the above program should take the form:

```
import java.util.Scanner;
public class HelloWorld {
    public static void main(String [] args) {
        float a, b, product;
        Scanner scan = new Scanner(System.in);
```

```
System.out.print("Enter any two Numbers: ");
a = scan.nextFloat();
b = scan.nextFloat();
product = a * b;
System.out.println("the product of a and b = " + product);
}
}
```

The output on the screen:

Enter any two Numbers:

If you enter two floating point values 2.9 and 3.6

the product of a and b = 10.44

will be outputted on the screen.

If the statement:

```
System.out.println("the product of a and b = " + product);
```

is replaced by the statement:

```
System.out.println(a + "* " + b + " = " + product);
```

Then the **output on the screen** is:

2.9 * 3.6 = 10.44

- **Note:** The word **public** in the statement:

```
public class HelloWorld
```

implies: that the program or the data within the program (such as **methods, variables** etc.) can be accessed directly by an external java program.

If replace the word **public** by **private** i.e.,

```
private class HelloWorld
```

is written instead of

```
public class HelloWorld
```

then the program or the **data within the program** (such as methods, variables etc.) cannot be accessed directly by an external program.

If you want to insert a **10 digit number** for a and b i.e.,

a=1000000000

b=3000000000, then the statement:

```
int a, b, product;
```

should be replaced by the statement:

```
long int a, b, product;
```

i.e.,

```
public class HelloWorld{
```

```
public static void main(String [] args){  
    long int a, b, product;  
    a=1000000000;  
    b=2000000000;  
    product = a * b;  
    System.out.println("the product of a and b = " + product);  
}  
}
```

The output on the screen:

the product of a and b = 30000000000000000000

- **What will be the output of the following program:**

```
public class HelloWorld{  
    static public void main(String args []) {  
        float x;  
        x = 2;  
        System.out.println(" square of a number = " + Math.pow((x), 2));  
    }  
}
```

Answer:

square of a number = 4

- **Program 2.2**

Java program to find the square of a number

```
public class HelloWorld{  
    public static void main(String [] args){  
        int a, b;
```

```
a=2;  
b = a * a;  
System.out.println("the square of a = " + b);  
}  
}
```

The output on the screen:

the square of a = 4

If you want to supply the value for **a** through the **key board**, then we have to rewrite the above program as follows:

```
import java.util.Scanner;  
public class HelloWorld{  
public static void main(String [] args) {  
int a, b;  
Scanner scan = new Scanner(System.in);  
System.out.println("Enter any Number: ");  
a = scan.nextInt();  
b = a * a;  
System.out.println("the square of a = " + b);  
}  
}
```

The output on the screen:

Enter any number:

If you enter a number 3

the square of a = 9 will be outputted on the screen.

- **Note:**

- If `scan.nextInt()` is written instead of `scan.nextInt()`
- `public static void main(string [] args);` is written instead of

```
public static void main(String [] args)
```

- `system.out.println("the square of a = " + b);` is written instead of

```
System.out.println("the square of a = " + b);
```

Then the **compilation error** will be displayed on the screen.

- **Program 2.3**

Java program to find the greatest of two numbers using *if - else* statement

The syntax of *if – else* statement is:

```
if (this condition is true)
{
    print this statement using the println method
}

else
{
    print this statement using the println method
}
```

```
public class HelloWorld{
    public static void main(String [] args){
        int a, b;
        a=2;
        b =3;
        if(a>b)
```

```
{  
    System.out.println("a is greater than b");  
}  
else  
{  
    System.out.println("b is greater than a");  
}  
}  
}
```

The output on the screen:

b is greater than a

In the above program:

if the condition (a> b) is true, then the statement

```
{  
    System.out.println("a is greater than b");  
}
```

is executed to print the output:

a is greater than b

else the statement

```
{  
    System.out.println("b is greater than a");  
}
```

is executed to print the output:

b is greater than a

If you want to supply the values *for a* and *b* through the **key board**, then the above program should be rewritten as:

```
import java.util.Scanner;
public class HelloWorld{
    public static void main(String [] args){
        int a, b;
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter any two Numbers: ");
        a = scan.nextInt();
        b = scan.nextInt();
        if(a>b)
        {
            System.out.println("a is greater than b");
        }
        else
        {
            System.out.println("b is greater than a");
        }
    }
}
```

The output on the screen:

Enter any two Numbers:
If you enter two numbers 2 and 3
b is greater than a
will be outputted on the screen.

▪ **Note:**

Even if the statements:

```
System.out.println("a is greater than b");
```

```
System.out.println ("b is greater than a");
```

are not written within the braces { }

i.e.,

```
import java.util.Scanner;
public class HelloWorld{
    public static void main(String [] args){
        int a, b;
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter any two Numbers: ");
        a = scan.nextInt();
        b = scan.nextInt();
        if(a>b)
            System.out.println("a is greater than b");
        if(b>a)
            System.out.println("b is greater than a");
    }
}
```

There will no display of *compilation error* on the screen or there will be **no change in the output** displayed on the screen (i.e., **b is greater than a** will be outputted on the screen).

- **Program 2.4**

Java program to find the greatest of three numbers using *else if* statement

The syntax of else if statement is:

```
if (this condition is true)
{
```

```
print this statement using the method System.out.println( );

}

else if (this condition is true)

{

print this statement using the method System.out.println( );

}

else

{

print this statement using the method System.out.println( );

}

public class HelloWorld{
    public static void main(String [] args){
        int a, b, c;
        a=2;
        b =3;
        c=4;
        if(a>b&&a>c)
        {
            System.out.println("a is greater than b and c");
        }
        else if(b>a&&b>c)
        {
            System.out.println("b is greater than a and c");
        }
        else
        {
            System.out.println("c is greater than b and a");
        }
    }
}
```

The output on the screen:

c is greater than b and a

If the statements:

```
if(a>b&&a>c)
{
    System.out.println("a is greater than b and c");
}
else if(b>a&&b>c)
{
    System.out.println("b is greater than a and c");
}
else
{
    System.out.println("c is greater than b and a");
}
```

are replaced by the statements:

```
if(a>b&&a>c)
{
    System.out.println(a + "is greater than" + b + "and" + c);
}
else if(b>a&&b>c)
{
    System.out.println(b + "is greater than" + a + "and" + c);
}
else
{
    System.out.println(c + "is greater than" + b + "and" + a);
}
```

Then the output on the screen is:

4 is greater than 3 and 2

- **Program 2.5**

Java program to find the average of 10 numbers

```
import java.util.Scanner;
public class HelloWorld{
    public static void main(String [] args) {
        int N1, N2, N3, N4, N5, N6, N7, N8, N9, N10, X;
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter any ten Numbers: ");
        N1 = scan.nextInt();
        N2 = scan.nextInt();
        N3 = scan.nextInt();
        N4 = scan.nextInt();
        N5 = scan.nextInt();
        N6 = scan.nextInt();
        N7 = scan.nextInt();
        N8 = scan.nextInt();
        N9 = scan.nextInt();
        N10 = scan.nextInt();
        X = (N1 + N2 + N3 + N4 + N5 + N6 + N7 + N8 + N9 + N10) /10;
        System.out.println("the average of 10 numbers = " + X);
    }
}
```

The output on the screen:

Enter any ten Numbers:

If you enter ten numbers 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10

the average of 10 numbers = 5

will be outputted on the screen.

- **Note:** The average of 10 numbers is **5.5**, the output on the screen is 5 because int is used instead of float.

- **Program 2.6**

Java program to find the simple interest

```
public class HelloWorld{
    public static void main(String [] args) {
        int P,T, R, SI;
        P = 1000;
        T = 2;
        R = 3;
        SI = P*T*R/100;
        System.out.println("the simple interest = " + SI);
    }
}
```

The output on the screen:

the simple interest = 60

If you want to supply the values for **P**, **T** and **R** through the **key board**, then the above program should take the form:

```
import java.util.Scanner;
public class HelloWorld {
    public static void main(String [] args) {
        int P,T, R, SI;
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter principal amount:");
        P = scan.nextInt();
        System.out.println("Enter time:");
        T = scan.nextInt();
        System.out.println("Enter rate of interest:");
        R = scan.nextInt();
```

```
SI = P*T*R/100;
System.out.println("the simple interest = " + SI);
}
}
```

The output on the screen:

Enter principal amount:

If you enter the principal amount 1000

Enter time:

If you enter the time 2

Enter rate of interest:

If you enter the rate of interest 3

the simple interest = 60

will be outputted on the screen.

• Program 2.7

Java program to find the senior citizen

```
public class HelloWorld{
    public static void main(String [] args){
        int age;
        age=20;
        if(age> = 60)
        {
            System.out.println("senior citizen");
        }
        else
        {
            System.out.println("not a senior citizen");
        }
    }
}
```

```
}
```

The output on the screen:

not a senior citizen

- (`age >= 60`) implies age greater than or equal to 60

If you want to supply the value for `age` through the **key board**, then the above program should be rewritten as:

```
import java.util.Scanner;
public class HelloWorld{
    public static void main(String [] args){
        int age;
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter the age: ");
        age = scan.nextInt();
        if(age >= 60)
        {
            System.out.println("senior citizen");
        }
        else
        {
            System.out.println("not a senior citizen");
        }
    }
}
```

The output on the screen:

Enter the age:

If you enter the age 60

senior citizen
will be outputted on the screen.
Suppose if you enter the age 28
not a senior citizen
will be outputted on the screen.

- **Program 2.8**

Java program to get marks for 3 subjects and declare the result:

If the marks ≥ 35 in all the subjects the student passes else fails.

```
public class HelloWorld{
    public static void main(String [] args){
        int M1, M2,M3;
        M1 = 38;
        M2= 45;
        M3 = 67;
        if(M1>= 35 && M2>= 35 && M3>= 35)
        {
            System.out.println("candidate is passed");
        }
        else
        {
            System.out.println("candidate is failed");
        }
    }
}
```

The output on the screen:

candidate is passed

If you want to supply the values for marks **M1**, **M2** and **M3** through the **key board**, then the above program should be rewritten as:

```
import java.util.Scanner;
public class HelloWorld{
    public static void main(String [] args) {
        int age;
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter any three Numbers: ");
        M1= scan.nextInt();
        M2 = scan.nextInt();
        M3 = scan.nextInt();
        if(M1>= 35 && M2>= 35 && M3>= 35)
        {
            System.out.println("candidate is passed");
        }
        else
        {
            System.out.println("candidate is failed");
        }
    }
}
```

The output on the screen:

```
Enter any three Numbers:
If you enter three numbers 26, 28, 39
candidate is failed
will be outputted on the screen.
```

- **Program 2.9**

Java program to find profit or loss

```
import java.util.Scanner;
public class HelloWorld{
    public static void main(String [] args) {
        int CP, SP, loss, profit;
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter cost price: ");
        CP = scan.nextInt();
        System.out.println("Enter selling price: ");
        SP = scan.nextInt();
        if(SP>CP)
        {
            System.out.println("profit= " + (SP-CP));
        }
        else
        {
            System.out.println("loss =" +(CP-SP));
        }
    }
}
```

The output on the screen:

Enter cost price:

If you enter the cost price 25

Enter selling price:

If you enter the selling price 26

profit = 1

will be outputted on the screen.

• Program 3.0

Java program to find the incremented and decremented values of two numbers

```

public class HelloWorld{
    public static void main(String [] args){
        int a, b, c, d, e, f;
        a = 10;
        b=12;
        c=a+1;
        d=b+1;
        e=a-1;
        f=b-1;

        System.out.print("the incremented value of a = "+ c);
        System.out.print("the incremented value of b = "+ d);
        System.out.print("the decremented value of a = "+ e);
        System.out.print("the decremented value of b = "+ f);
    }
}

```

The output on the screen:

the incremented value of a = 11 the incremented value of b = 13
 the decremented value of a = 9 the decremented value of b = 11

If the statements:

```

System.out.print("the incremented value of a = "+ c);
System.out.print("the incremented value of b = " + d);
System.out.print("the decremented value of a = " + e);
System.out.print("the decremented value of b = " + f);

```

are replaced by the statements:

```
System.out.print("\n the incremented value of a = " + c);
System.out.print("\n the incremented value of b = " + d);
System.out.print("\n the decremented value of a = " + e);
System.out.print("\n the decremented value of b = " + f);
```

Then the **output on the screen** is:

```
the incremented value of a = 11
the incremented value of b = 13
the decremented value of a = 9
the decremented value of b = 11
```

i.e., **\n** make provision for the another result to print in the **new line**. If you want to supply the values *for a and b* through the **key board**, then the above program should take the form:

```
import java.util.Scanner;
public class HelloWorld{
    public static void main(String [] args){
        int a, b, c, d, e, f;
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter any Number: ");
        a = scan.nextInt();
        System.out.println("Enter any Number: ");
        b = scan.nextInt();
        c=a+1;
        d=b+1;
        e=a-1;
        f=b-1;
        System.out.print("\n the incremented value of a = " + c);
        System.out.print("\n the incremented value of b = " + d);
        System.out.print("\n the decremented value of a = " + e);
        System.out.print("\n the decremented value of b = " + f);
    }
}
```

```
}
```

The output on the screen:

```
Enter any Number:  
If you enter the value 2  
Enter any Number:  
If you enter the value 3  
  
the incremented value of a = 3  
the incremented value of b = 4  
the decremented value of a = 1  
the decremented value of b = 2  
  
will be outputted on the screen.
```

- What will be the output of the following programs:

A)

```
import java.util.Scanner;  
public class temperature{  
public static void main(String [] args) {  
float T1, T2, A;  
Scanner scan = new Scanner(System.in);  
System.out.println("Enter any Number: ");  
T1 = scan.nextFloat();  
System.out.println("Enter any Number: ");  
T2 = scan.nextFloat();  
A = (T1 + T2) / 2;  
System.out.println("the average temperature of the day = " + A);
```

```
 }  
 }
```

Answer:

Enter any Number:

If you enter the number 2

Enter any Number:

If you enter the number 3

the average temperature of the day = 2.5

will be outputted on the screen.

B)

```
import java.util.Scanner;  
public class HelloWorld{  
    public static void main(String [] args) {  
        int P;  
        Scanner scan = new Scanner(System.in);  
        System.out.println("Enter the percentage: ");  
        P = scan.nextInt();  
        if(P >= 60)  
        {  
            System.out.println("first class");  
        }  
        else if(P>=50&&P <60)  
        {  
            System.out.println("second class");  
        }  
        else  
        {  
            System.out.println("pass class");  
        }  
        if(P<40)
```

```
{  
    System.out.println("fail");  
}  
}  
}
```

Answer:

Enter the percentage:

If you enter the number 60

first class

will be outputted on the screen.

• Program 3.1

Java program to calculate the discounted price and the total price after discount

Given:

- If purchase value is greater than 1000, 10% discount
- If purchase value is greater than 5000, 20% discount
- If purchase value is greater than 10000, 30% discount

▪ discounted price

```
import java.util.Scanner;  
public class HelloWorld{  
    public static void main(String [] args) {  
        int PV, dis;  
        Scanner scan = new Scanner(System.in);  
        System.out.println("Enter purchased value: ");  
        PV = scan.nextInt();  
        if(PV<1000)  
        {
```

```

System.out.println("dis = " + PV* 0.1);
}
else if(PV>5000)
{
System.out.println("dis = " + PV* 0.2);
}
else
{
System.out.println("dis= " + PV* 0.3);
}
}
}
}

```

The output on the screen:

Enter purchased value:

If you enter the purchased value 6500

dis = 1300

will be outputted on the screen.

- **total price**

```

import java.util.Scanner;
public class HelloWorld{
public static void main(String [] args) {
int PV, total;
Scanner scan = new Scanner(System.in);
System.out.println("Enter purchased value: ");
PV = scan.nextInt();
if(PV<1000)
{
System.out.println("total= " + PV - PV* 0.1);
}
else if(PV>5000)
{

```

```

        System.out.println("total = " + PV- PV* 0.2);
    }
    else
    {
        System.out.println("total= " + PV- PV* 0.3);
    }
}
}

```

The output on the screen:

Enter purchased value:

If you enter the purchased value 650

total = 585

will be outputted on the screen.

- Combing both the programs (above), we can write:

```

import java.util.Scanner;
public class HelloWorld{
public static void main(String [] args){
int PV, dis, total;
Scanner scan = new Scanner(System.in);
System.out.println("Enter purchased value: ");
PV = scan.nextInt();
if(PV<1000)
{
System.out.println("dis = " + PV* 0.1);
System.out.println("total= " + total - dis);
}
else if(PV>5000)
{
System.out.println("dis = " + PV* 0.2);
System.out.println("total= " + total - dis);
}
}

```

```

}
else
{
System.out.println("dis = " + PV* 0.3);
System.out.println("total= " + total - dis);
}
}
}
}

```

The output on the screen:

```

Enter purchased value:
If you enter the purchased value 850
dis = 85
total = 765
will be outputted on the screen.

```

- **Program 3.2**

Java program to print the first ten natural numbers using **for loop** statement

```

public class HelloWorld{
public static void main(String [] args){
int i;
for (i=1; i<=10; i++)
System.out.println("value of i = " + i);
}
}

```

The output on the screen is:

```

value of i = 1 value of i = 2  value of i= 3  value of i= 4  value of i= 5  value of
i= 6 value of i = 7 value of i= 8  value of i = 9  value of i = 10

```

If the statement:

```
System.out.println("value of i = " + i);
```

is replaced by the statement:

```
System.out.println("\n value of i = " + i);
```

Then the **output on the screen** is:

```
value of i = 1  
value of i = 2  
value of i = 3  
value of i = 4  
value of i = 5  
value of i = 6  
value of i = 7  
value of i = 8  
value of i = 9  
value of i = 10
```

If the **for loop** statement:

```
for (i=2; i<=10; i++)
```

is written instead of the statement:

for(i=1; i<=10; i++), then the **output on the screen** is:

```
value of i = 2  value of i = 3  value of i= 4  value of i= 5  value of i= 6  
value of i = 7  value of i= 8  value of i = 9  value of i= 10
```

If the *for loop* statement:

```
for (i=1; i<=10; i++)
```

is written instead of the statement: `for (i=1; i<10; i++)`, then the **output on the screen** is:

```
value of i = 1 value of i = 2 value of i = 3 value of i = 4 value of i = 5 value of  
i = 6 value of i = 7 value of i = 8 value of i = 9
```

- **Note:** the condition `i<=10` tells to print till value of `i=10` but the condition `i<10` tells to print till value of `i=9`

If the statement:

```
for(i=1; i=10; i++)
```

is written instead of the statement: `for (i=1; i<=10; i++)`, then the output on the screen is:

```
value of i = 10  
value of i = 10 value of i = 10 value of i = 10 value of i = 10 value of i = 10  
value of i = 10 value of i = 10 value of i = 10 value of i = 10 value of i = 10  
value of i = 10 value of i = 10 value of i = 10 value of i = 10 value of i = 10  
  
continues ....
```

If the statement:

`System.out.println("\n value of i = " + i);` is replaced by the statement

```
System.out.println("\n " + i);
```

Then the **output on the screen** is:

1
2
3
4
5
6
7
8
9
10

- **What is the mistake in the following program:**

```
public class HelloWorld{  
    public static void main(String []args) throws Exception{  
        System.out.println("Hello World");  
    }  
}
```

Answer:

There is **no mistake** in the above program. Addition of the statement **throws Exception** does not make any change in the output displayed on the screen or give rise to **any compilation error** on the screen.

- **Program 3.3**

What will be the output of the following program:

```
public class HelloWorld{
    public static void main(String [] args) {
        int i;
        for (i =1; i<=5; i++)
            System.out.println("\n Linux is not portable");
    }
}
```

Answer:

```
Linux is not portable
```

- **Java program to print the first ten natural numbers using *while loop* statement**

The syntax of *while loop* statement is:

```
while (this is the condition)
{
    execute this statement;
}
```

```
public class HelloWorld{
    public static void main(String [] args)
    {
        int i = 1;
```

```
while (i<=10)
{
System.out.println("\n " + i++);
}
}
```

The output on the screen is:

1
2
3
4
5
6
7
8
9
10

If the statement:

int i = 1;

is replaced by

```
int i = 0;
```

Then the output on the screen is:

0
1
2
3
4
5
6
7
8
9
10

Similarly if the statement `int i = 0;` is replaced by

`int i = 7;`

Then the **output on the screen** is:

7
8
9
10

- Java program to print first 10 numbers using *do while loop* statement

The syntax of do while loop statement is:

```
do
{
    execute this statement;
```

```
}

while(this is the condition);
```

```
public class HelloWorld{
    public static void main(String [] args)
    {
        int i =1;
        do
        {
            System.out.println(" \n i= " + i++);
        } while (i<=10);
    }
}
```

The output on the screen is:

i=1

i=2

i=3

i=4

i=5

i=6

i=7

i=8

i=9

i=10

The statement:

```
System.out.println(" \n i= " + i++);
```

is executed and then condition (**i<=10**) is checked. If condition (i<=10) is true then

The statement:

```
System.out.println(" \n i= " + i++);
```

is executed again. This process repeats until the given condition (i<=10) becomes false.

- **Program 3.4**

Java program to print the characters from A to Z using *for loop*, *do while loop* and *while loop* statement.

- **Java program to print the characters from A to Z using for loop statement:**

```
public class HelloWorld{  
    public static void main(String [] args) {  
        char a;  
        for( a='A'; a<='Z'; a++)  
            System.out.println("\n    " + a);  
    }  
}
```

The output on the screen:

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

W

X

Y

Z

- **Java program to print the characters from A to Z using while loop statement:**

```
public class HelloWorld{  
    public static void main(String [] args) {  
        char a = 'A';
```

```
while (a<='Z')
{
System.out.println("\n " + a++);
}
}
```

- **Java program to print the characters from A to Z using do while loop statement:**

```
public class HelloWorld{
public static void main(String [] args) {
char a = 'A';
do
{
System.out.println("\n " + a++);
} while (a<='Z');
}
}
```

- **Program 3.5**

Java program to print the given number is even or odd.

```
import java.util.Scanner;
public class HelloWorld{
public static void main(String [] args) {
int a;
Scanner scan = new Scanner(System.in);
System.out.println("Enter a number: ");
a = scan.nextInt();
```

```
if(a%2 == 0)
{
    System.out.println("the number is even");
}
else
{
    System.out.println("the number is odd");
}
```

The output on the screen:

Enter a number:

If you enter the number 4

the number is even

will be outputted on the screen.

• Program 3.6

Java program to print the remainder of two numbers

```
import java.util.Scanner;
public class HelloWorld{
    public static void main(String [] args) {
        int a, b, c;
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter a number: ");
        a = scan.nextInt();
        System.out.println("Enter a number: ");
        b = scan.nextInt();
        c = a%b;
        System.out.println("the remainder of a and b = " + c);
    }
}
```

```
}
```

The output on the screen:

```
Enter a number:  
If you enter the number 3  
Enter a number:  
If you enter the number 2  
  
the remainder of a and b = 1  
  
will be outputted on the screen.
```

Since (a =3 and b =2). Therefore: 3 divided by 2 (i.e., a divided by b) yields the remainder equal to 1.

- **Program 3.7**

Java program to check equivalence of two numbers.

```
import java.util.Scanner;  
public class HelloWorld{  
    public static void main(String [] args) {  
        int x, y;  
        Scanner scan = new Scanner(System.in);  
        System.out.println("Enter a number: ");  
        x = scan.nextInt();  
        System.out.println("Enter a number: ");  
        y = scan.nextInt();  
        if(x-y==0)  
        {  
            System.out.println("the two numbers are equivalent");  
        }  
        else
```

```
{  
    System.out.println("the numbers are not equivalent");  
}  
}
```

The output on the screen:

```
Enter a number:  
If you enter the number 2  
Enter a number:  
If you enter the number 2
```

the two numbers are equivalent

will be outputted on the screen.

- **Program 3.8**

Java program to print the leap year or not

```
public class HelloWorld{  
    public static void main(String [] args) {  
        int year;  
        year =1996;  
        if(year%4==0)  
        {  
            System.out.println("leap year");  
        }  
        else  
        {  
            System.out.println("not a leap year");  
        }  
    }  
}
```

```
}
```

```
}
```

The output on the screen:

leap year

- **What will be the output on the screen:**

```
public class HelloWorld{
    int a =5;
    public static void main(String[] args){
        int a =2 ;
        System.out.println(" value of a = " + a);
    }
}
```

Answer:

value of a = 2

If the statement:

```
System.out.println(" value of a = " + a);
```

is replaced by the statement

```
System.out.println(" value of a = " + ::a);
```

(where `::` denote scope resolution operator)

i.e.,

```
public class HelloWorld{  
    int a =5;  
    public static void main(String[] args){  
        int a =2 ;  
        System.out.println(" value of a = " + ::a);  
    }  
}
```

Then the **compilation error** will be displayed on the screen because [like C++] **JAVA** does not hold **or** support the **resolution operator**.

- **Program 3.9**

Java program to print whether the given number is positive or negative

```
public class HelloWorld{  
    public static void main(String [] args){  
        int a;  
        a = -35;  
        if(a>0)  
        {  
            System.out.println("number is positive");  
        }  
        else  
        {  
            System.out.println(" number entered is negative");  
        }  
    }  
}
```

The output on the screen:

number entered is negative

Since $a = -35$. Therefore:

a is less than 0 i.e., $a < 0$

The statement

```
{  
    System.out.println("number is negative");  
}
```

is executed to print the output:

number entered is negative

• **Program 4.0**

Java program to print the sum of the first 10 digits using for loop statement:

```
public class HelloWorld{  
    public static void main(String [] args) {  
        int i, sum = 0;  
        for( i=1; i<=10; i++)  
            sum = sum + i;  
        System.out.println("sum of the first 10 digits = " + sum);  
    }  
}
```

The output on the screen:

sum of the first 10 digits = 55

The statement:

```
System.out.println("sum of the first 10 digits = " + sum);
```

is executed to display the output:

sum of the first 10 digits = 55

on the screen.

If the statement:

```
int i, sum = 0;
```

is replaced by

```
int i, sum = 1;
```

Then the **output on the screen** is:

sum of the first10 digits = 56

- **What will be the output if the *for loop* statement `for(i =1; i<=10; i++)` is replaced by the statement `for(i =2; i<10; i++)`?**

Answer: sum of 10 digits = 44

If the statement

```
int i, sum, sum = 0; is written instead of int i, sum = 0;
```

Then the *compilation error message* will be displayed on the screen (stating that sum is twice declared).

If the *for loop* is ended with a semicolon i.e.,

```
for( i=1; i<=10; i++);
```

Then the **compilation error** will be displayed on the console screen.

- **Program 4.1**

Java program to print the average of the first 10 numbers using *for loop* statement

```
public class HelloWorld{
    public static void main(String [] args){
        int i, avg, sum = 0;
        for( i=1; i<=10; i++)
            sum = sum + i;
        avg = sum/10;
        System.out.println("sum of the first 10 numbers = " + sum);
        System.out.println("average of the first 10 numbers = " + avg);
    }
}
```

The output on the screen:

```
sum of the first 10 numbers = 55
average of the first 10 numbers = 5
```

If the **data type** float is used i.e.,

```
public class HelloWorld{
    public static void main(String [] args) {
        float i, avg, sum = 0;
        for( i=1; i<=10; i++)
            sum = sum + i;
        avg = sum/10;
        System.out.println("sum of the first 10 numbers = " + sum);
        System.out.println("average of the first 10 numbers = " + avg);
    }
}
```

The output on the screen:

sum of the first 10 numbers = 55

average of the first 10 numbers = 5.5

- **Program 4.2**

Java program to print the product of the first 10 digits using *for loop* statement

```
public class HelloWorld{
    public static void main(String [] args) {
        int i, product = 1;
        for( i=1; i<=10; i++)
            product = product * i;
        System.out.println("the product of the first 10 digits = " + product);
    }
}
```

The output on the screen:

the product of the first 10 digits = 3628800

The statement:

```
System.out.println("the product of the first10 digits = " + product);
```

is executed to display the output:

the product of the first 10 digits = 3628800

If the statement `int i, product = 1;` is replaced by `int i, product = 0;`

Then the output on the screen is:

the product of the first 10 digits = 0

If the statement `for(i=1; i<=10; i++)` is replaced by `for(i=5; i<=8; i++)`

Then the output on the screen is:

the product of the first 10 digits = 1680

- **Program 4.3**

Java Program to print the table of a number using the *for loop* statement

```
import java.util.Scanner;
public class HelloWorld{
public static void main(String [] args){
int n, i;
Scanner scan = new Scanner(System.in);
System.out.println("Enter a number: ");
n = scan.nextInt();
for( i=1; i<=5; i++)
System.out.println ( \n n + " * " + i + " = " + n * i);
```

```
}
```

```
}
```

Output on the screen:

```
Enter any number:
```

```
If you enter the number 2 (i.e., n=2)
```

```
2 * 1 = 2  
2 * 2 = 4  
2 * 3 = 6  
2 * 4 = 8  
2 * 5 = 10
```

```
will be outputted on the screen.
```

If the symbol ***** is replaced by **+**

i.e.,

```
import java.util.Scanner;  
public class HelloWorld{  
    public static void main(String [] args){  
        int n, i;  
        Scanner scan = new Scanner(System.in);  
        System.out.println("Enter a number: ");  
        n = scan.nextInt();  
        for( i=1; i<=5; i++)  
            System.out.println ( \n n + " + " + i + " = " + n + i);  
    }  
}
```

Then the output on the screen is:

Enter any number:
If you enter the number 2 (i.e., n=2)

2 + 1 = 3
2 + 2 = 4
2 + 3 = 5
2 + 4 = 6
2 + 5 = 7

will be outputted on the screen.

- **Program 4.4**

Java program to print the first 10 numbers starting from one together with their squares

```
public class HelloWorld{  
    public static void main(String[] args){  
        int i;  
        for( i=1; i<=10; i++)  
            System.out.println(" number = " + i + " its square = " + i*i);  
    }  
}
```

The output on the screen:

```
number = 1 its square=1number = 2 its square=4number = 3 its square=9number = 4 its  
square=16number = 5 its square=25number = 6 its square=36number = 7 its square=49number  
= 8 its square=64number = 9 its square=81number= 10 its square=100
```

If the statement:

```
System.out.println(" number = " + i + " its square = " + i*i);
```

is replaced by the statement

```
System.out.println(" \n number = " + i + " its square = " + i*i);
```

i.e.,

```
public class HelloWorld{
    public static void main(String[] args){
        int i;
        for( i=1; i<=10; i++)
            System.out.println(" \n number = " + i + " its square = " + i*i);
    }
}
```

Then the output on the screen is:

```
number = 1 its square=1
number = 2 its square=4
number = 3 its square=9
number = 4 its square=16
number = 5 its square=25
number = 6 its square=36
number = 7 its square=49
number = 8 its square=64
number = 9 its square=81
number= 10 its square=100
```

If the statement:

```
System.out.println(" \n number = " + i + " its square = " + i*i);
```

is replaced by the statement:

```
System.out.println(" \n number = " + i + " \t its square = " + i*i);
```

i.e.,

```
public class HelloWorld{  
    public static void main(String[] args){  
        int i;  
        for( i=1; i<=10; i++)  
            System.out.println(" \n number = " + i + " \t its square = " + i*i);  
    }  
}
```

Then the output on the screen is:

```
number=1      its square=1  
number=2      its square=4  
number=3      its square=9  
number=4      its square=16  
number=5      its square=25  
number=6      its square=36  
number=7      its square=49  
number=8      its square=64  
number=9      its square=81  
number=10     its square=100
```

tab /t is included because to leave space between

number =1 and its square=1

If the statement:

```
System.out.println(" \n number = " + i + " \t its square = " + i*i);
```

is replaced by the statement:

```
System.out.println(" \n number = " + i + " \n its square = " + i*i);
```

i.e.,

```
public class HelloWorld{  
    public static void main(String[] args){  
        int i;  
        for( i=1; i<=10; i++)  
            System.out.println(" \n number = " + i + " \n its square = " + i*i);  
    }  
}
```

Then the output on the screen is:

```
number = 1  
its square=1  
number = 2  
its square=4  
number = 3  
its square=9  
number = 4  
its square=16  
number = 5  
its square=25  
number = 6  
its square=36  
number = 7  
its square=49  
number = 8  
its square=64  
number = 9
```

```
its square=81
number= 10
its square=100
```

- Write a program to print the first 10 numbers starting from one together with their squares and cubes:

Answer:

```
public class HelloWorld{
    public static void main(String[] args) throws Exception{
        int i;
        for( i=1; i<=10; i++)
            System.out.println(" \n number = " + i + " its square = " + i*i + " its cube = " +
i*i*i);
    }
}
```

- Program 4.5

Java program to print the sum of two numbers using method

```
public class HelloWorld{
    public static void main(String[] args){
        int a, b, c;
        a = 11;
        b = 6;
        c = add (a, b);
        System.out.println(" sum of two numbers = " + c);
    }
    public static int add (int a, int b) {
```

```
    return (a+b) ;
}
}
```

The output on the screen:

```
sum of two numbers = 17
```

There are 2 methods in the above program:

- public static void main(String[] args)
- public static int add (int a, int b)

public static void main(String[] args) imply: **main method** and

{

} imply the body of the **main method** with in which the program statements:

```
int a, b, c;
a = 11;
b = 6;
c = add (a, b);
System.out.println(" sum of two numbers = " + c);
```

are written.

- Like in C ++ (the **function declaration** is not made) and unlike in C [(the **function declaration** is made) – there is no need for method declaration in Java (i.e., without the

method declaration the program will be successfully executed and the result will be outputted on the screen]

`public static int add (int a, int b) imply: the method to add two integers x and y`
and

```
{  
    return (a+b);  
}
```

imply the body of the method **public static int add (int a, int b)**

main method:

```
public static void main(String[] args)
```

and the **method:**

```
public static int add (int a, int b)
```

should be written inside the body of the **public class HelloWorld.**

The statement

```
int a, b, c;
```

imply that we creating the integer variables **a, b** and **c**.

The statements:

```
a = 11;  
b = 6;  
c = add (a, b);
```

imply that we are assigning the values to the created variables.

The statement:

```
c = add (x, y);
```

imply **method call** (i.e., we are calling the method **public static int add (int a, int b)** to add the values (i.e., 11 and 6) and return the result (i.e., 17) to the statement

```
System.out.println(" sum of two numbers = " + c);
```

to make provision to display the output of the sum of two entered numbers as 17 on the screen.

- **Java program to print the product of two numbers using method**

```
public class HelloWorld{  
    public static void main(String[] args) {  
        int a, b, c;  
        a = 2;  
        b = 3;  
        c = mult (a, b);  
        System.out.println(" product of two numbers = " + c);  
    }  
    public static int mult (int a, int b){  
        return (a*b) ;  
    }  
}
```

```
}
```

The output on the screen:

product of two numbers = 6

will be outputted on the screen.

▪ Java program to print the greatest of two numbers using method

```
import java.util.Scanner;
public class HelloWorld{
    public static void main(String[] args) {
        int a, b;
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter any two numbers: ");
        a = scan.nextInt();
        b = scan.nextInt();
        System.out.println(" largest of two numbers = " + max (a, b) );
    }
    public static int max (int a, int b) {
        if(a>b)
            return a;
        else
            return b;
    }
}
```

The output on the screen:

Enter any two numbers:

If you enter two numbers 5 and 2

largest of two numbers= 5

will be outputted on the screen.

- **Java program to print the greatest of three numbers using method**

```
import java.util.Scanner;
public class HelloWorld{
    public static void main(String[] args) {
        int a, b, c;
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter any three numbers: ");
        a = scan.nextInt();
        b = scan.nextInt();
        c = scan.nextInt();
        System.out.println(" largest of two numbers = " + max (a, b, c) );
    }
    public static int max (int a, int b, int c) {
        if(a>b && a>c)
            return a;
        else if (b>c && b>a)
            return b;
        else
            return c;
    }
}
```

The output on the screen:

```
Enter any three numbers:
If you enter three numbers 3, 5 and 10
```

```
largest of three numbers = 10
```

will be outputted on the screen.

- **Java program to print the square of the number using method**

```
import java.util.Scanner;
public class HelloWorld{
    public static void main(String[] args) {
        int x;
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter any number: ");
        x = scan.nextInt();
        System.out.println("square of the number = " + square (x));
    }
    public static int square (int x){
        return x*x;
    }
}
```

The output on the screen is:

Enter any number:

If you enter the number 5

square of the number = 25

will be outputted on the screen.

- **Program 4.6**

Switch (case) allows to make decision from the number of choices i.e., from the number of cases

For example:

```
public class HelloWorld{
```

```
public static void main(String[] args) throws Exception{
    char ch;
    System.out.print("Enter a character:");
    ch = (char)System.in.read();
    switch(ch)
    {
        case 'R':
            System.out.print("Red");
            break;
        case 'W':
            System.out.print("White");
            break;
        case 'Y':
            System.out.print("Yellow");
            break;
        case 'G':
            System.out.print("Green");
            break;
        default:
            System.out.print("Error");
            break;
    }
}
```

The output on the screen is:

```
Enter a character:  
If you enter a character R  
  
Red  
  
will be outputted on the screen.
```

- **Program 4.7**

Java program to print the output

Element [0] = 16

Element [1] = 18

Element [2] = 20

Element [3] = 25

Element [4] = 36

using arrays:

```
public class HelloWorld{
    public static void main(String[] args){
        int i;
        int [] num = {16, 18, 20, 25, 36};
        for(i=0; i<5; i++)
            System.out.println("Element [" + i + " ] = " + num[i]);
    }
}
```

The output on the screen:

Element [0] = 16

Element [1] = 18

Element [2] = 20

Element [3] = 25

Element [4] = 36

Ends because of the condition **i<5**.

Array declaration in C:

```
int num [5] = {16, 18, 20, 25, 36};
```

```
or  
int num [] = {16, 18, 20, 25, 36};
```

```
Array declaration in C++:  
int num [5] = {16, 18, 20, 25, 36};  
or  
int num [] = {16, 18, 20, 25, 36};
```

```
But array declaration in java:  
int [] num = {16, 18, 20, 25, 36};
```

- **Java program to print the sum of the elements in array.**

```
public class HelloWorld{  
    public static void main(String[] args){  
        int i, sum = 0;  
        int [] num = {16, 18, 20, 25, 36};  
        for(i=0; i<5; i++)  
            sum = sum + num[i];  
        System.out.println("Sum of the Elements in the array = " + sum);  
    }  
}
```

The output on the screen:

```
Sum of the Elements in the array = 115  
i.e., 16 + 18 + 20 + 25 + 36 = 115
```

- **Java program to print the average of the elements in the array**

```
public class HelloWorld{
    public static void main(String[] args){
        int i, avg, sum = 0;
        int [] num = {16, 18, 20, 25, 36};
        for(i=0; i<5; i++)
            sum = sum + num[i];
        avg = sum/5;
        System.out.println("Sum of the Elements in the array = " + sum);
        System.out.println("average of the Elements in the array = " + avg);
    }
}
```

The output on the screen:

Sum of the Elements in the array = 115

average of the elements in the array = 23

- **Write a program to print**

Einstein [0] = E

Einstein [1] = I

Einstein [2] = N

Einstein [3] = S

Einstein [4] = T

Einstein [5] = E

Einstein [6] = I

Einstein [7] = N

using arrays

Answer:

```
public class HelloWorld{
    public static void main(String[] args) throws Exception{
        int i;
        char [] num = {'E' , 'I', 'N', 'S', 'T', 'E', 'I', 'N'};
        for(i=0; i<8; i++)
            System.out.println("Einstein [" + i + " ] = " + num[i]);
    }
}
```

- **What will be the output of the following programs?**

i)

```
public class HelloWorld{
    public static void main(String[] args) throws Exception{
        int i;
        int [] name = {'E' , 'I', 'N', 'S', 'T ', 'E', 'I', 'N'};
        for(i=0; i<8; i++)
            System.out.println("Einstein [" + i + " ] = " + name[i]);
    }
}
```

Answer:

```
Einstein [0] = 69
Einstein [1] = 73
Einstein [2] = 78
Einstein [3] = 83
Einstein [4] = 84
Einstein [5] = 69
```

```
Einstein [6] = 73
Einstein [7] = 78
```

ii)

```
public class HelloWorld{
    public static void main(String[] args) throws Exception{
        int i;
        char [] body = {'b', 'o', 'd', 'y'};
        for(i=0; i<4; i++)
            System.out.println("body [" + body [i] + " ] = " + body [i]);
    }
}
```

Answer:

```
body [b] = b
body [o] = o
body [d] = d
body [y] = y
```

```
import java.util.Scanner;
public class HelloWorld {
    public static void main(String [] args) {
        int x, y;
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter any Number: ");
        x = scan.nextFloat();
        System.out.print("Enter any Number: ");
        y = scan.nextInt();
        System.out.println(" square root of x = " + Math.sqrt(x));
        System.out.println(" square root of y = " + Math.sqrt(y));
    }
}
```

The output on the screen:

```
Enter any Number:  
If you enter the number 9  
  
square root of x = 3  
  
will be outputted on the screen.  
Enter any Number:  
If you enter the number 4  
  
square root of y = 2  
  
will be outputted on the screen.
```

If

```
/*  
  
*/
```

is introduced i.e.,

```
import java.util.Scanner;  
public class HelloWorld {  
public static void main(String [] args) {  
int x, y;  
Scanner scan = new Scanner(System.in);  
System.out.print("Enter any Number: ");  
x = scan.nextInt();  
/*  
System.out.print("Enter any Number: ");  
y = scan.nextInt();  
*/
```

```
System.out.println(" square root of x = " + Math.sqrt(x));  
  
/*  
System.out.println(" square root of y = " + Math.sqrt(y));  
*/  
}  
}
```

Then the output on the screen is:

Enter any Number:

If you enter the number 9

square root of x = 3

will be outputted on the screen.

▪ **What is the mistake in the following program:**

```
public class HelloWorld {  
    public static void main(String [] args) {  
        long float x;  
        Scanner scan = new Scanner(System.in);  
        System.out.print("Enter any Number: ");  
        x = scan.nextFloat();  
        System.out.println(" square root of x = " + Math.cbrt(x));  
    }  
}
```

Answer:

long float x; should not be used – only **float x** should be used because **Java** do not support the data type such as long int, long float etc.

- **Program 4.8**

continue and break statements:

A)

```
public class HelloWorld{
    public static void main(String []args){
        int i;
        for (i=1; i<=5; i++){
            if (i==3){
                continue;
            }

            System.out.println(" " + i);
        }
    }
}
```

Output on the screen:

1

2

4

5

B)

```
public class HelloWorld {
    public static void main(String []args){
        int i;
        for (i=1; i<=5; i++){
            if (i==3){
                break;
            }

            System.out.println(" " + i);
        }
    }
}
```

```
}

System.out.println("") + i);
}

}

}
```

Output on the screen:

1

2

- **What will be the output of the following program:**

```
public class HelloWorld {
public static void main(String args[]){
System.out.println(Math.max(1269, 1356));
}
}
```

Output on the screen:

1356

Abstraction → hiding implementation details from the user by providing interface

Encapsulation → hiding data

In the statement:

"1 + 2"

"1" and "2" imply the operands and the plus symbol imply the operator.

- **Polymorphism**

Suppose if you are in **class room** that time you behave like a student, when you are in **shopping mall** at that time you behave like a customer, when you at your **home** at that time you behave like a son or daughter. Your ability to present in different-different behaviors is known as **polymorphism**.

In the example:

```
public class HelloWorld
{
    public static void main(String [] args)
    {
        int a, b, sum;
        a=1;
        b=2;
        sum = a + b;
        System.out.println("the sum of a and b = " + sum);
    }
}
```

Plus symbol ("+") act as an arithmetic operator in the statement:

```
sum = a+b;
```

and it acts as the **concatenation operator** in the statement:

```
System.out.println("the sum of a and b = " + sum);
```

The ability of plus symbol to behave both as **arithmetic operator** and **concatenation operator** is known as **polymorphism**.

- **Inheritance**

```
public class game {  
}  
  
public class player extends game{  
}
```

Here **public class player extends game** implies: **class player** is public and it is the sub class of the **class game**. Since class player is the subclass of class game – class player automatically takes on all the behavior and attributes of its parent class "**game**" i.e., methods or fields within the class game will be automatically be included in the class player.

The statements:

```
public class player extends game  
  
public class game extends ball
```

implies: that **class player** is not only a **subclass of class game** but also it is a subclass of class ball.

- **Encapsulation**

```
public class Account {  
    private decimal accountBalance = 500.00;  
  
    public decimal CheckBalance() {  
        return accountBalance;  
    }  
}  
  
/* accountBalance can be checked via public "CheckBalance" method provided by the  
"Account" class but its value cannot be manipulated because data variable  
accountBalance is declared private */
```

Encapsulation is the technique of bringing the data variables and methods in single frame and declaring data variable private (so it cannot be accessed by anyone outside the class, thereby **hiding or encapsulating** the data variable (**String name**) within the public class **Student**) and providing indirect access to the **data variable** via public methods.

"I think that it's extraordinarily important that we in computer science keep fun in computing. When it started out it was an awful lot of fun. Of course the paying customers got shafted every now and then and after a while we began to take their complaints seriously. We began to feel as if we really were responsible for the successful error-free perfect use of these machines. I don't think we are. I think we're responsible for stretching them setting them off in new directions and keeping fun in the house. I hope the field of computer science never loses its sense of fun. Above all I hope we don't become missionaries. Don't feel as if you're Bible sales-men. The world has too many of those already. What you know about computing other people will learn. Don't feel as if the key to successful computing is only in your hands. What's in your hands I think and hope is intelligence: the ability to see the machine as more than when you were first led up to it that you can make it more."

— Alan J. Perlis

ANDROID

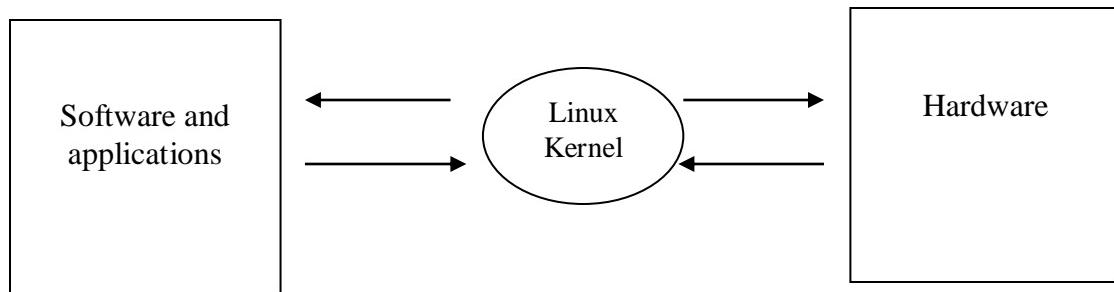
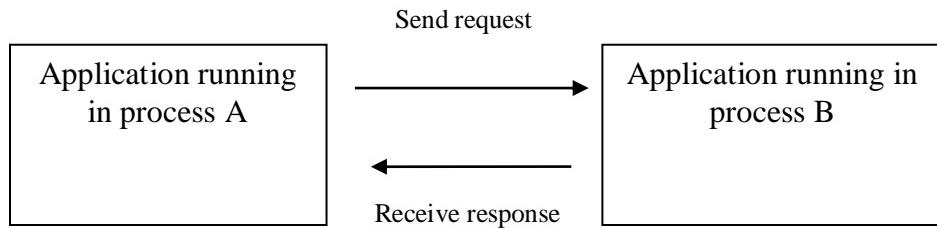
Linux based operating system currently developed by [Google](#), based on the [Linux kernel](#) and designed primarily for [touchscreen](#) mobile devices such as [smartphones](#) and [tablets](#) -- which empowers millions of mobile devices such as smartphones and tablet computers across the world – first developed by Android Inc. (a Palo Alto-based startup company, founded in 2003) and later subsequently acquired by and further advanced by a coalition of hardware, software and telecommunications companies i.e., open hand set alliance (a group of 84 technology and mobile companies including Dell, Motorola, Samsung Electronics, Sony, Intel, LG Electronics, Qualcomm, Broadcom, HTC, Sprint, Texas Instruments and Japanese wireless carriers KDDI and NTT DoCoMo etc.) – led by Google Inc. and was initially released in September 23, 2008 under the Apache v2 open source license.



Android Architecture

- **LINUS KERNEL**

Core part / heart of the android operating system – developed by Linus Torvalds in 1991 – which consists of drivers (i.e., a well-defined set of instructions – what we call programs or software written in C language that is installed into mobile phones and stored in the form of files in the phone) – that tells your mobile phone how to communicate with its hardware components such as camera, display etc. – without which keypad, Bluetooth, Audio, Wi-Fi, Camera won't work properly and it is responsible for Inter Process Communication (IPC: a mechanism which allows applications running in different processes to share data and communicate with each other i.e., a mechanism which allows an application running in a process to send requests and receive responses from an application running in another process), Power management (conserves power in the expense of performance and holds the device not to get to sleep state) and Memory management (make the best or most effective use of memory).



Intercommunication of software and applications with hardware through Linux Kernel

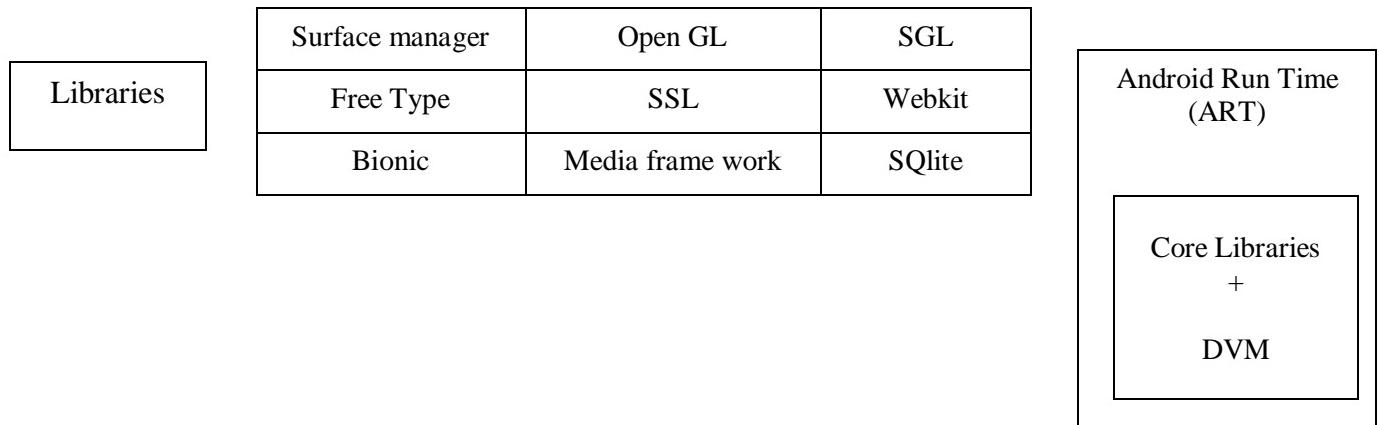
- **LIBRARIES**

A collection of prewritten non-volatile data (written in C/ C++ language) and precompiled programming codes – which support the well-functioning of android operating system.

Libraries include:

- ❖ **Surface Manager/ Screen manager** (support the display screen)
- ❖ **OpenGL** (Open Graphics Library) – support 3Dimemsional graphics
- ❖ **SGL** (Scalable Graphics Library) – support 2Dimensional graphics
- ❖ **Media Framework** – support recording and playback of audio and video and image formats (MP3, JPG, JPEG, PNG, GIF etc.)
- ❖ **Free Type** – responsible for font support (i.e., font size, color etc.)
- ❖ **SSL** (Secured Sockets layer) / **TLS** (Transport Layer Security) – responsible for internet security and support network applications
- ❖ **WebKit** – support the display of web pages (i.e., support inbuilt browser)
- ❖ **SQLite** – responsible for storage of user data

- ❖ **Bionic** – standard C library WHICH supports embedded Linux based devices in mobile phones



Android Run Time (ART)

This includes **Java core libraries** (consists of Java packages) and **DVM** (Dalvik Virtual Machine) – which is responsible to run android application.

Java source code is compiled into Java bytecode which is stored within .class file and the Java bytecode is read, verified and executed by Java Virtual Machine (JVM). But in the case of Google's Android operating system, DVM (Dalvik Virtual Machine) is used instead of JVM because JVM is designed for desktops and it is too heavy for mobile devices and moreover JVM takes more memory, runs and loads slower compared to DVM.

In case of desktop operating system,

Java source codes – are compiled to – Java byte codes (which then stored in **.class file**) – read, verified and executed by JVM.

In case of Google's Android operating system,

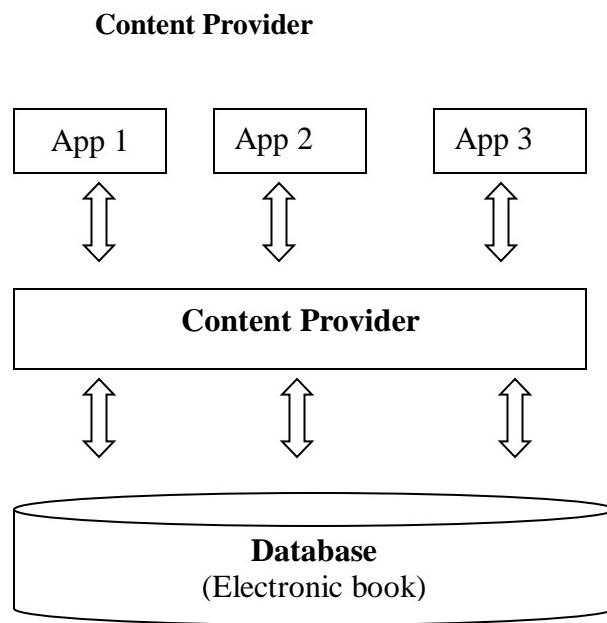
Java source codes – are compiled to – Java byte codes (which then stored in .class file) – a tool called dx then converts Java byte codes into Dalvik byte codes (which are then stored in .dex file i.e., in . Dalvik Executable file) – and are read, verified and executed by DVM (Dalvik Virtual Machine – open-source software meaning a software which is freely available to the public – developed by Dan Bornstein, who named it after the fishing village of Dalvik in Iceland).

Application Frame Work

A software frame work (written in Java language) that supports the features of android applications

Application Frame Work includes:

- Content Provider
- Notifications Manager
- Activity Manager
- Window Manager
- Location Manager
- View manager
- Package manager
- Telephony manager
- XMPP (Extensible Messaging and Presence Protocol)
- Resource manager:



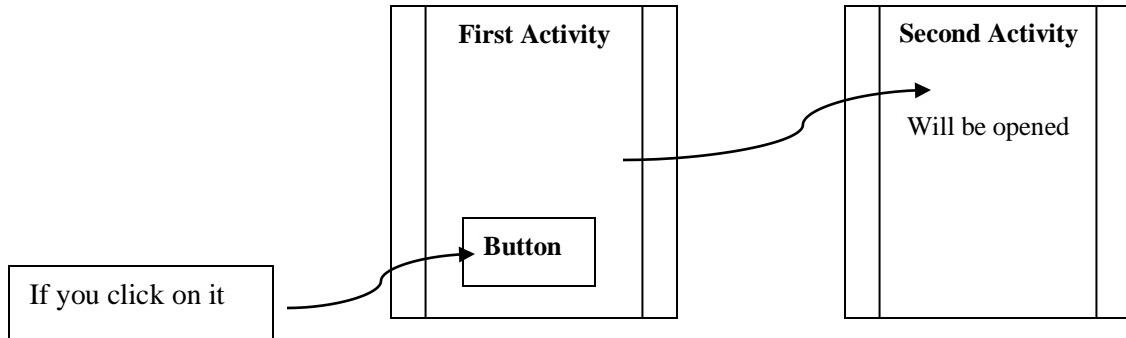
Data of applications (App 1, App 2 and App 3) are stored in database (which may be SQLite or Files etc.). If application App 1 requests content provider for the data of the application App 2, then the content provider fetches the data of the application App 2 and sends to App 1. Thus the data of App 2 is shared by App 1 THROUGH Content provider.

"Content provider allows the sharing of data among various applications."

Notifications Manager

Notifications Manager – display alerts and notifications (like low battery, you have got 2 messages, you have 2 missed calls etc.) to the user.

Activity Manager



If you open your mailbox application, you see number of activities such as inbox, sent, draft etc.

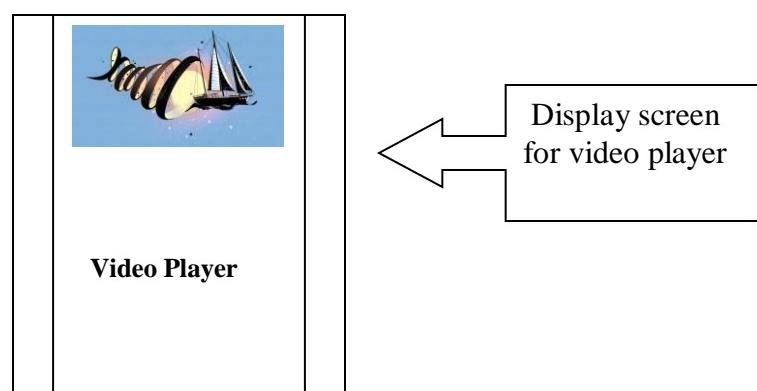
If you click on inbox, then another activity showing the list of inbox mails is opened.

And if you click on one of the inbox mail, then another activity showing the content of inbox mail is opened.

The activity manager manages and keeps the record of these activities.

Window Manager

Window Manager organizes the display screen for the application

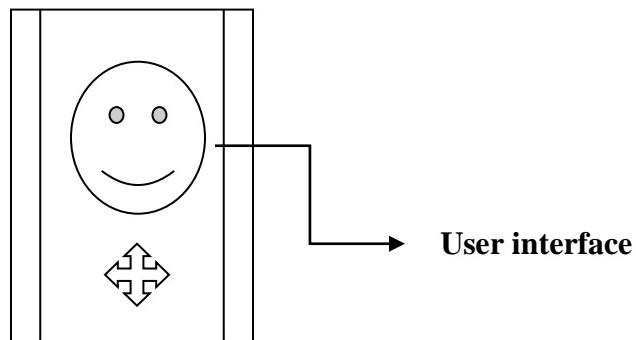


The display screen for the video player application organized by Window Manager

Location Manager

Location Manager provides the periodic updates of the geographical location of the mobile device using GPS (Global Positioning System which is a satellite-based navigation system) or cell tower.

View manager



View manager manages the apps user interface.

Package manager

Package manager provide information about the list of installed apps in Android mobile device.

Telephony manager

Telephony manager provide information about the Telephony services (such as phone network, SIM serialnumber, IMEI number etc.).

XMPP

XMPP (Extensible Messaging and Presence Protocol) supports online chat application (like yahoo messenger etc.).

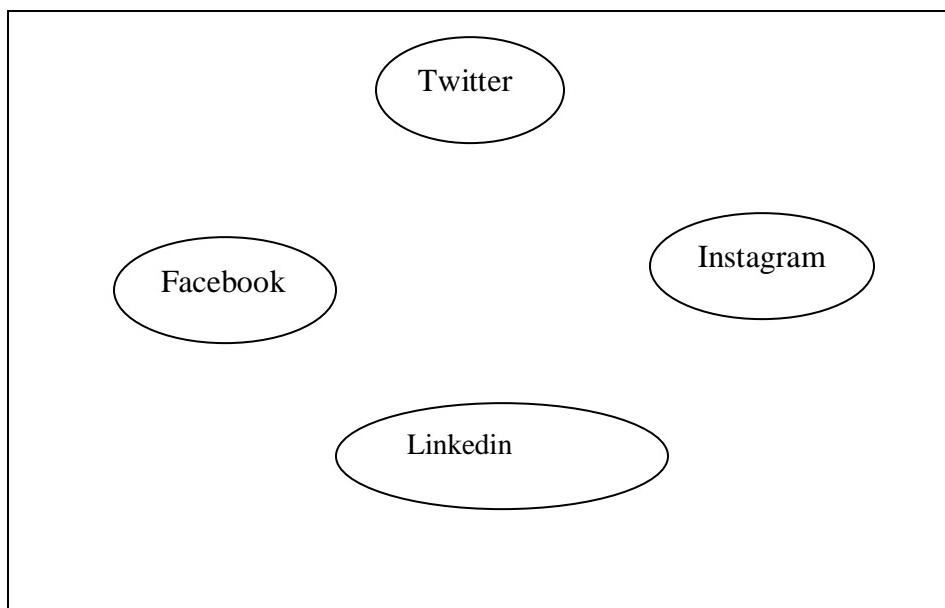


Resource manager

Where you can store all the non-code resources like images, graphics, videos, audios, animations, pictures that your application might use as backgrounds etc. – and you can upload these resources to your app.

Applications

Which include: contacts, browser, messages, Facebook, whatsup etc.



Android - Application Components

"which are the building blocks of android application."

The main components of the android application are:

- Activities
- Services
- Broadcast Receivers
- Content Providers
- Intent
- View
- Android Virtual Device (AVD)
- Android Emulator

Activities

If you open your phone application, you see number of activities such as received calls, dialed calls, missed calls etc.

If you click on received calls, then another activity (i.e., screen showing the list of received calls) is opened.

And if you click on one of the received call, then another activity showing the information about the received call (such as the phone number of received call, the time at which it was received etc.) is opened.

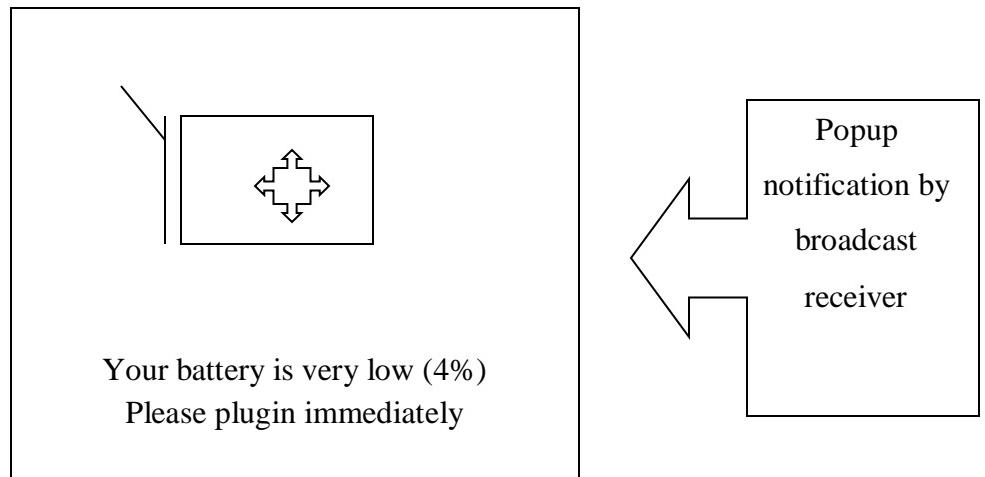
And if you want to make a call, another activity showing the number keypad is opened.

Services

If you want the music to play in the background or if you want some video to be downloaded while you are browsing over the internet – services provide feasibility for the music to play in the background or video to be downloaded while you are browsing over internet.

Broadcast Receivers

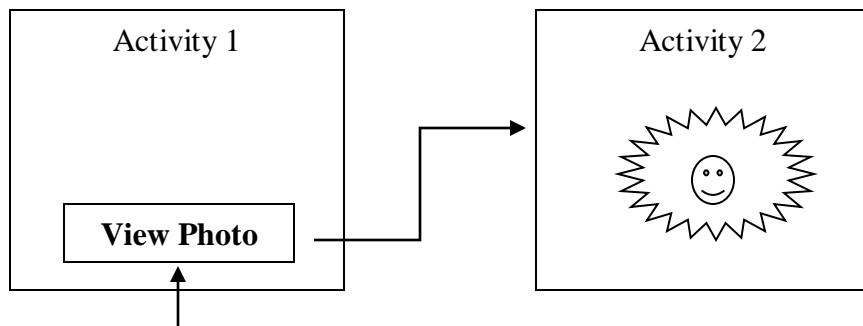
pop up notifications such as low battery, charging, Power got connected to the mobile device, Power got disconnected from the mobile device, A headset was plugged in, A headset was plugged out.



Content Providers

If you type a request for the meaning of a word in the search engine of user dictionary application User dictionary application sends the request to content resolver and the content resolver sends the request to the content provider and the content provider fetches the information from the database and directs it to the content provider and then from content provider to content resolver and finally from content resolver to user application.

Intent



When you press view photo, intent (message) is sent to the android operating system to open another activity (i.e., activity 2) which display the photo

View (apps user interface)

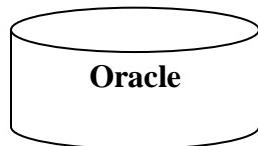
Android Virtual Device (AVD) & Emulator

Different android mobile devices possess different configurations. After running and testing your android application on emulator (the component that allows the testing of android application without the necessity to install the application on a physical Android based mobile device) you need Android Virtual Device (AVD) to test whether the application is compatible with a particular android mobile device configuration before installation of the app into that mobile device.

How to create an android application which says Hello Android

There is one major step for getting started with Android operation:

You need to download java development kit i.e., JDK (jdk-8u91-windows-x64.exe) from the website



<http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html>

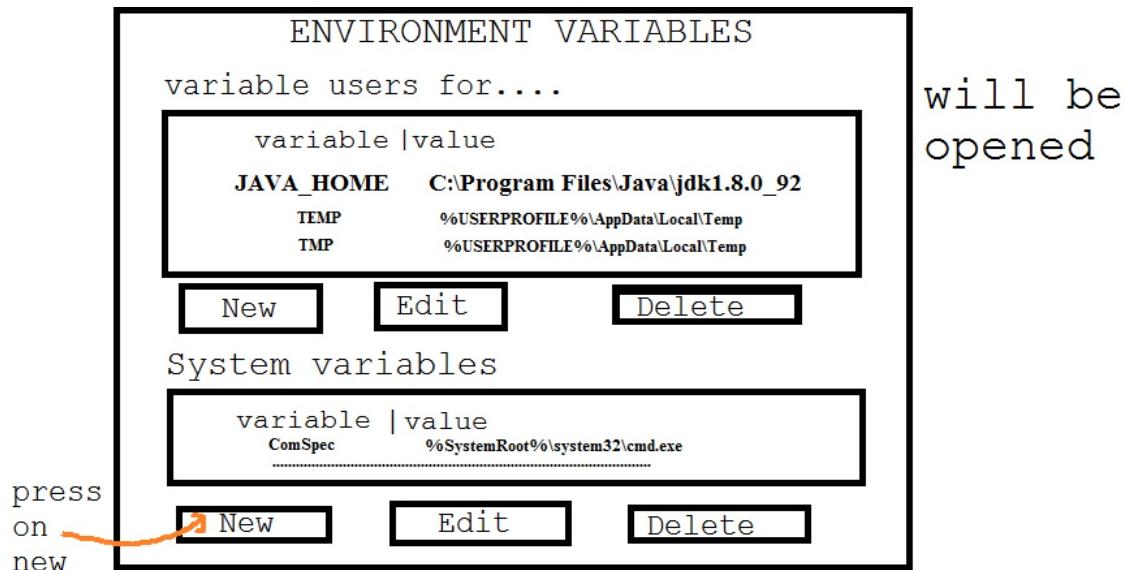
And after downloading and installing it into your computer,

You need to download android studio (1.5.1 or 2.0) from the website

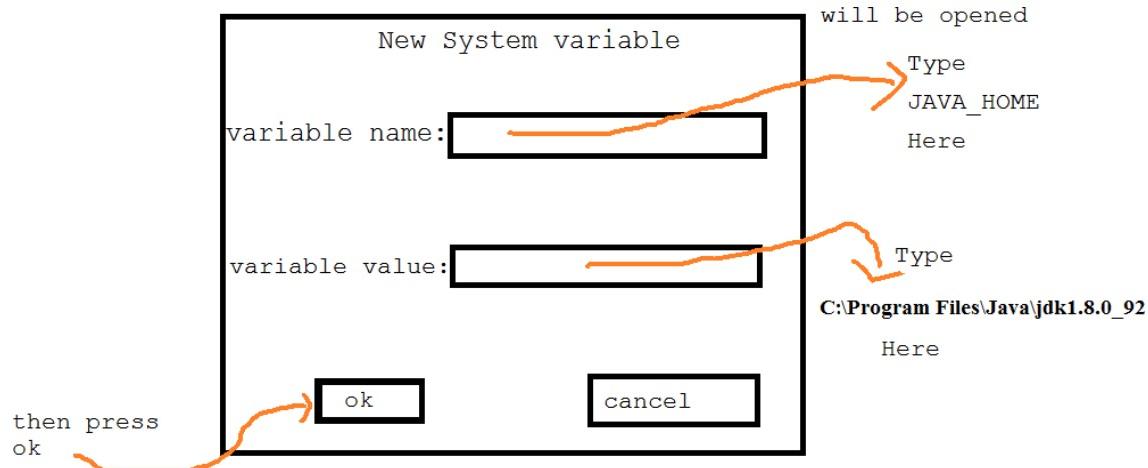
<http://developer.android.com/sdk/index.html>

And after downloading and installing it into your computer, if you try to open the studio – you will observe a popup message stating that your JDK does not point to valid installation and your studio will be forcibly closed. For that you need to follow **the following steps:**

Open control panel → then open System and Security→ then open System → then open Advanced system settings → click on Environment variables then a window



And if you click on New button—then a window



And restart the system → now open your studio → and follow the option

File → New → New project

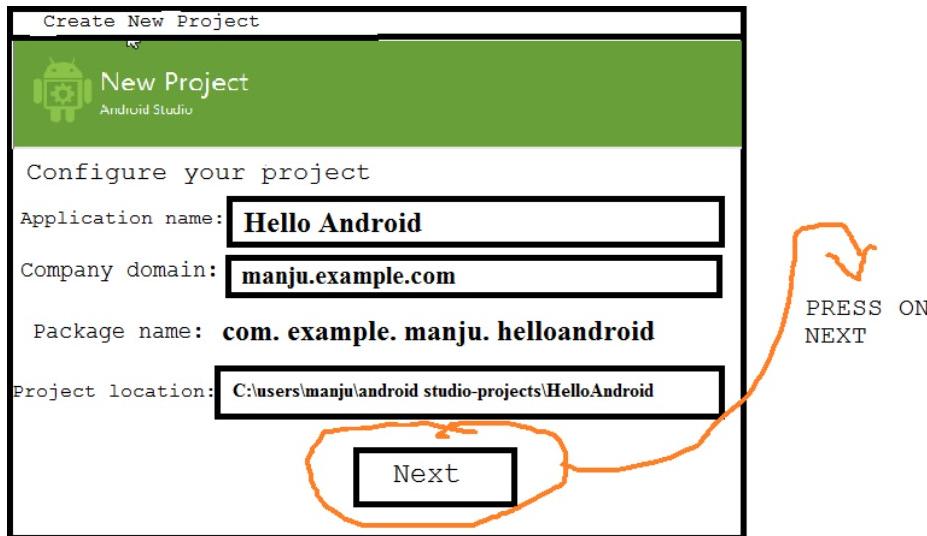
And Create New Project window is opened and in create new project window you will see a list of things:

Application name:

Company domain:

Package name:

Project location:



Application name: name of the application you are going to create

Because you are going to create Hello Android application,

Application name is **Hello Android**

Company domain: domain name which you prefer to be associated with your app to preserve its unique identity in Google play store —without which you cannot generate a package name and without the package name you cannot distribute your app in the official app store for Android smartphones and tablets or in the online android market like Google play store.

In this case we just name the

Company domain as manju.example.com

Package name:

Since Company domain is manju.example.com and application name is Hello Android

Package name is:

com.example.manju.Helloandroid (which is autogenerated)

Project location: a file or folder on your hard drive where the newly created application will be stored.

In this case the above project will be stored in the C drive and the path of the project will be as follows:

C:\Users\Manju\AndroidStudioProjects\HelloAndroid

Application name: Hello Android

Company domain: manju.example.com

Package name: com.example.manju.Helloandroid

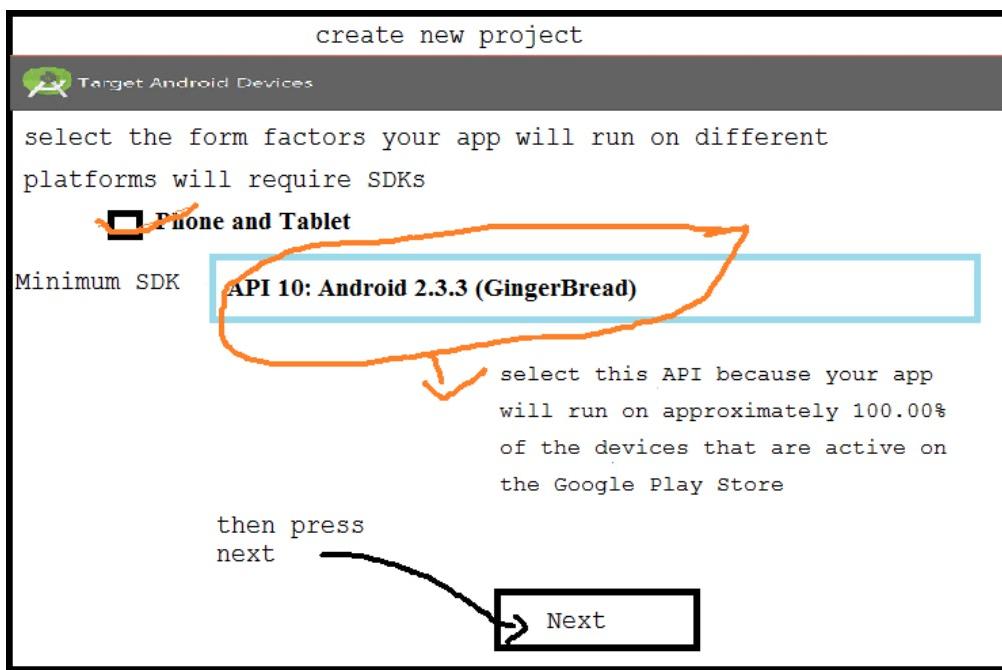
Project location: C:\Users\Manju\AndroidStudioProjects\HelloAndroid

Once you have set the application name, company domain and project location, click on the "Next" button in the lower right corner of the Create New Project window.

And then a window

Target Android devices

Will be opened



Because normally apps are installed into phones and smart phone tablets we select Phones and Tablets (instead of TV, Glass , Android Auto and Wear). And under Phones and Tablets – we select minimum SDK (SDK means software development kit): **API 10: Android 2.3.3 (GingerBread)** because we wish our app to run on approximately 100.00% of the devices that are active on the Android market. Selection of minimum SDK is very important because

If you select minimum SDK:

API 15: Android 4.0.3 (IceCreamSandwich)

Then your app will run on only approximately 96.2% of the mobile devices that are active on the Google play store.

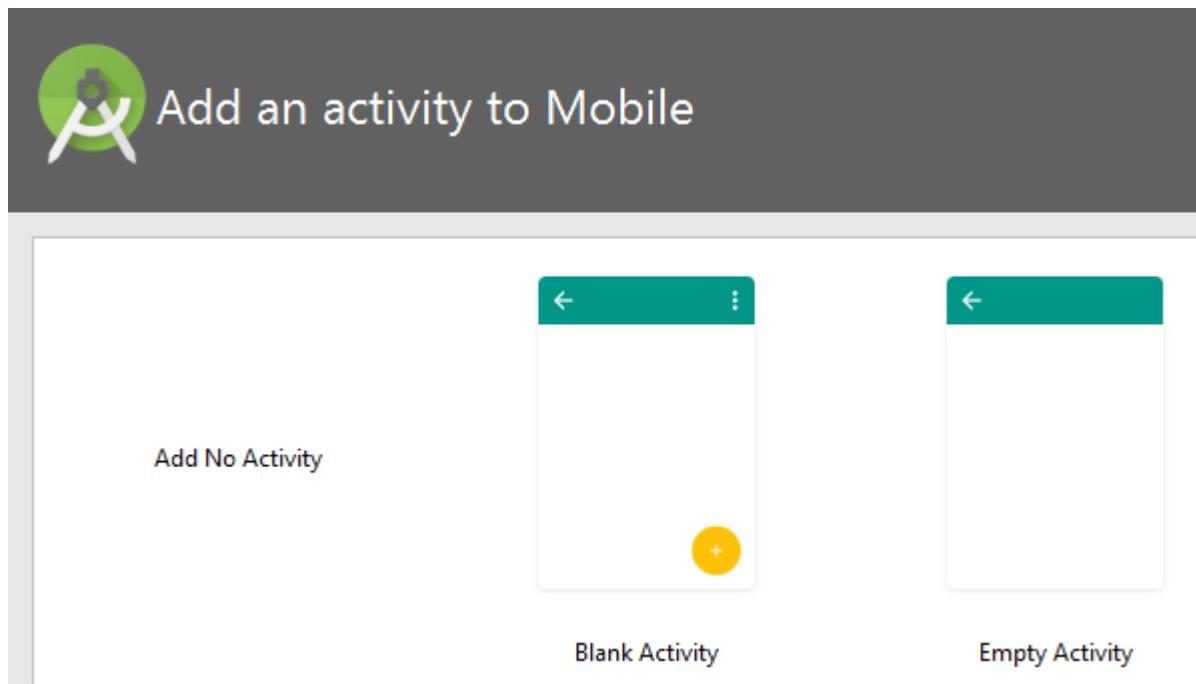
Suppose if you select minimum SDK:

API16: Android 4.1 (Jelly Bean)

Then your app will run on approximately 94.8% of the mobile devices that are active on the Google play store.

After selecting the minimum SDK --click on the "Next" button in the lower right corner of the Target Android devices window.

And then a window -- add an activity to mobile -- will be opened



And you need to select an activity and click on the "Next" button in the lower right corner of the Add an activity to mobile window.

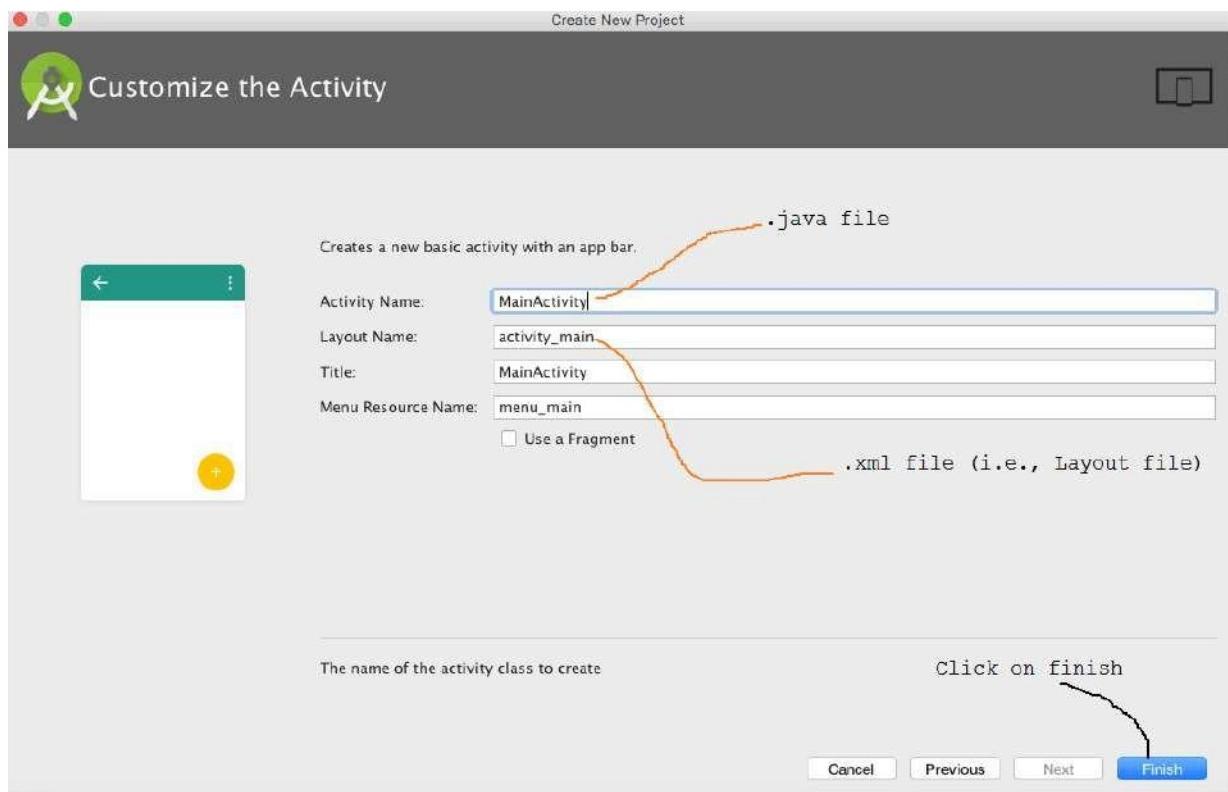


In this case, we select blank activity

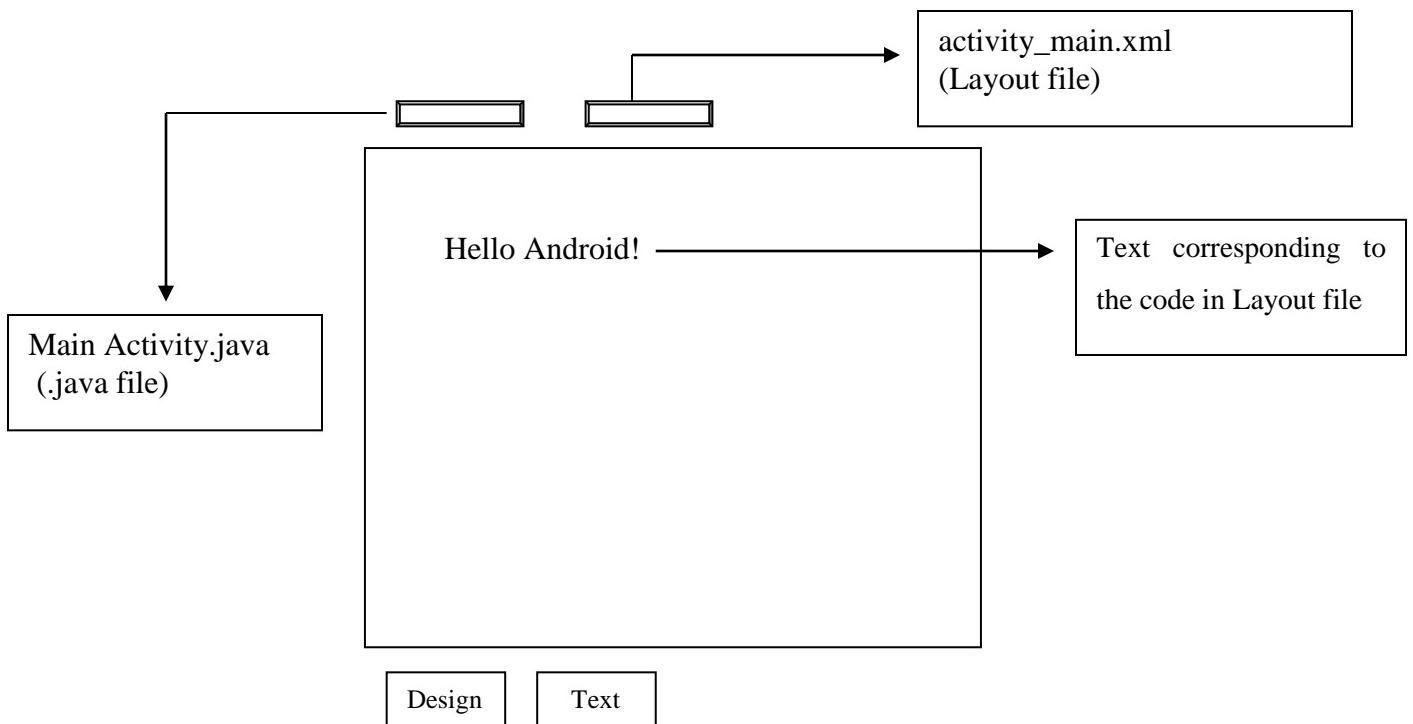
And then a window

Customize the activity

Will be opened



If you click on finish button -- a new window displaying .java and xml file will be opened displaying the text Hello Android!



If you click on text button then 2 files

- **Main Activity.java**
- **activity_main.xml**

will be displayed on the screen.

And in **activity_main.xml** file

You see

```
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Hello Android!" />
```

If you replace the statement

```
    android:text="Hello Android!"
```

by the statement

```
    android:text="Hello World!"
```

Then instead of Hello Android!

Hello World!

Will be displayed on the screen.

If you add the statement

```
    android: textAppearance ="?android:attr/textAppearanceSmall"
```

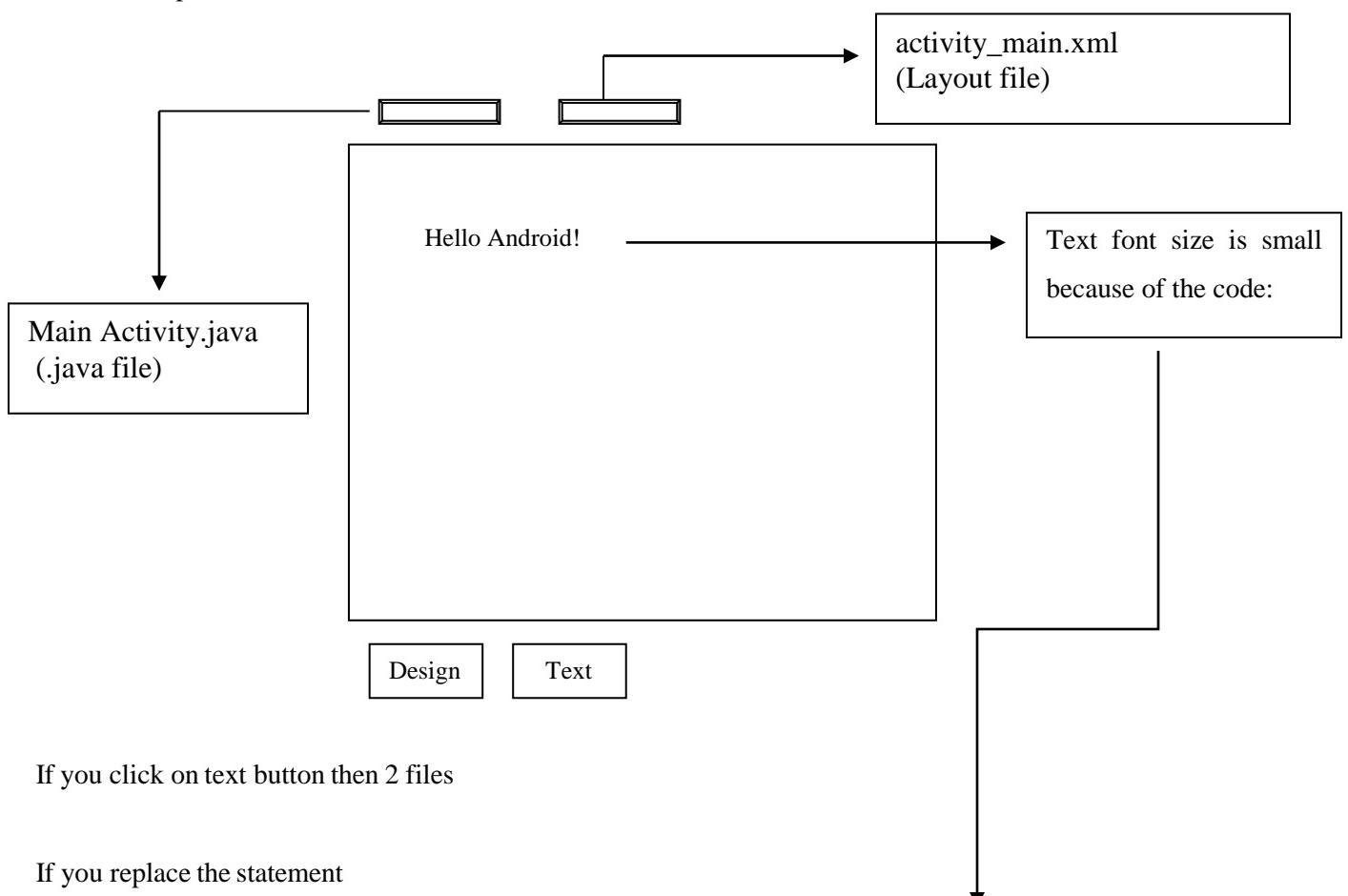
after the statement

```
        android:text="Hello Android!"
```

i.e.,

```
<TextView  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:text="Hello Android!"  
    android: textAppearance ="?android:attr/textAppearanceSmall"  
/>
```

Then the output on the screen is:



If you click on text button then 2 files

If you replace the statement

```
    android: textAppearance ="?android:attr/textAppearanceSmall"
```

by the statement

```
    android: textAppearance ="?android:attr/textAppearanceMedium"
```

Then the font size of **Hello Android!** will be medium.

If you replace the statement

```
    android: textAppearance ="?android:attr/textAppearanceSmall"
```

by the statement

```
    android: textAppearance ="?android:attr/textAppearanceLarge"
```

Then the font size of Hello Android! will be large.

Suppose if add the statement

```
    android:textStyle="bold"
```

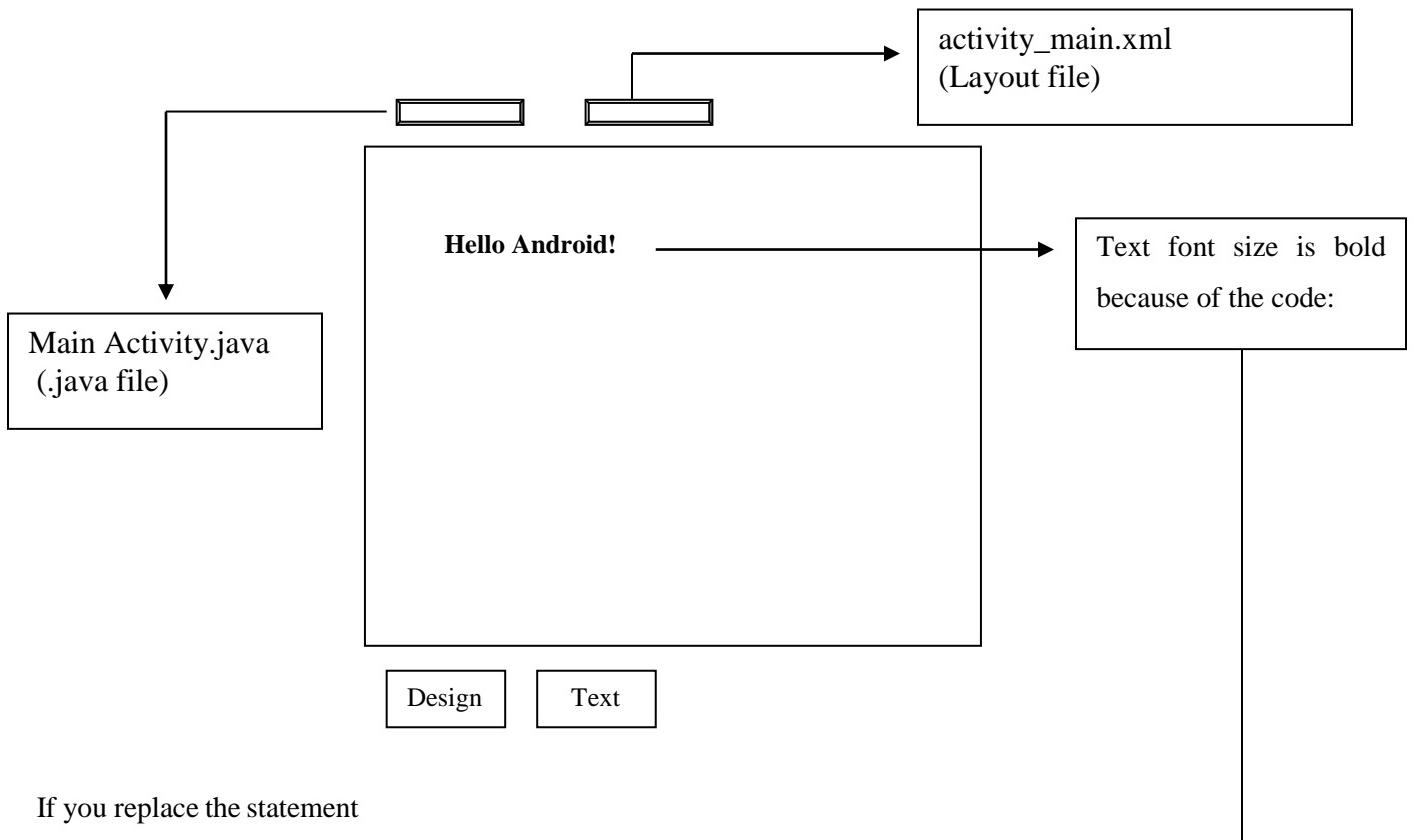
after the statement

```
    android: textAppearance ="?android:attr/textAppearanceSmall"
```

i.e.,

```
<TextView  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:text="Hello Android!"  
    android: textAppearance ="?android:attr/textAppearanceSmall"  
    android:textStyle="bold"  
/>
```

Then the output on the screen is:



If you replace the statement

```
    android:textStyle="bold"
```

by the statement

```
    android:textStyle="italic"
```

Then the text

Hello Android!

will be in italic format

i.e.,

Hello Android!

Suppose if you replace the statement

```
    android:textStyle="bold"
```

by the statement

```
    android:textStyle="bold|italic"
```

Then the text

Hello Android!

will appear as:

Hello Android!

If you add the statement

```
    android:textColor="#33b5e5"
```

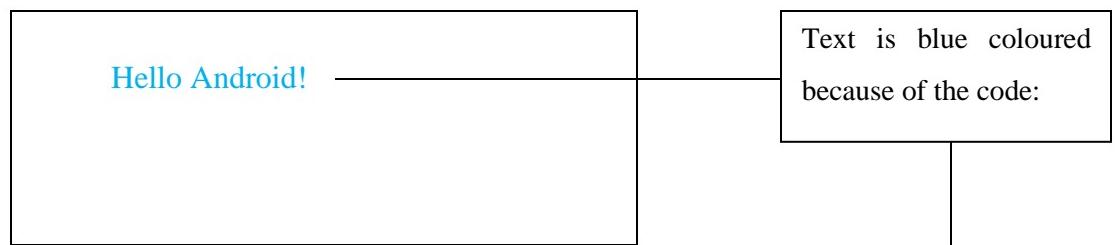
after the statement

```

        android:textStyle="bold"
i.e.,
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Hello Android!"
    android: textAppearance="?android:attr/textAppearanceSmall"
    android:textStyle="bold"
    android:textColor="#33b5e5"/>

```

Then the output on the screen is:



If you replace

#33b5e5

by #33b565

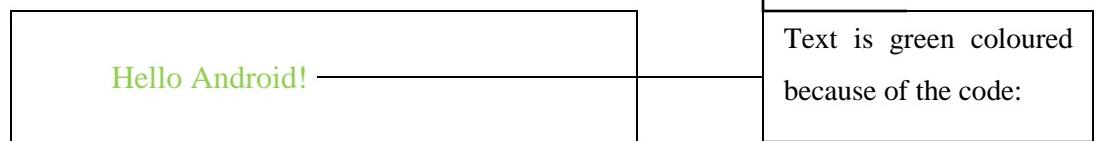
i.e., if you replace the statement

← android:textColor="#33b5e5"

by the statement

← android:textColor="#33b565"

Then the output on the screen is:



If you add the statement

← android:textSize="50sp"

after the statement

← android:textColor="#33b5e5"

i.e.,

```

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Hello Android!"

    android: textAppearance="?android:attr/textAppearanceSmall"
    android:textStyle="bold"
    android:textColor="#33b5e5"
    android:textSize="50sp" />

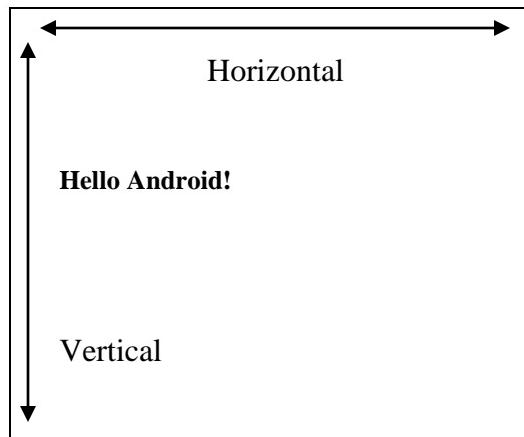
```

Then the output on the screen is:

50sp corresponds to **Hello Android!**

100sp corresponds to **Hello Android!**

150sp corresponds to **Hello Android!**



Suppose if you add the statement

```
    android:layout_centerHorizontal="true"
```

after the statement

```
        android:layout_height="wrap_content"
```

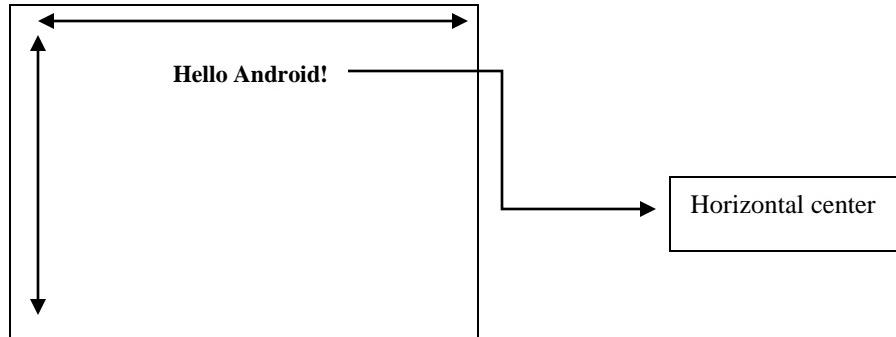
i.e.,

```

<TextView
    android:layout_width="wrap_content" android:layout_height="wrap_content"
    android:layout_centerHorizontal="true"
    android:text="Hello Android!"
```

```
    android: textAppearance="?android:attr/textAppearanceSmall"
    android:textStyle="bold"
    android:textColor="#33b5e5"
    android:textSize="50sp" />
```

Then the output on the screen is:



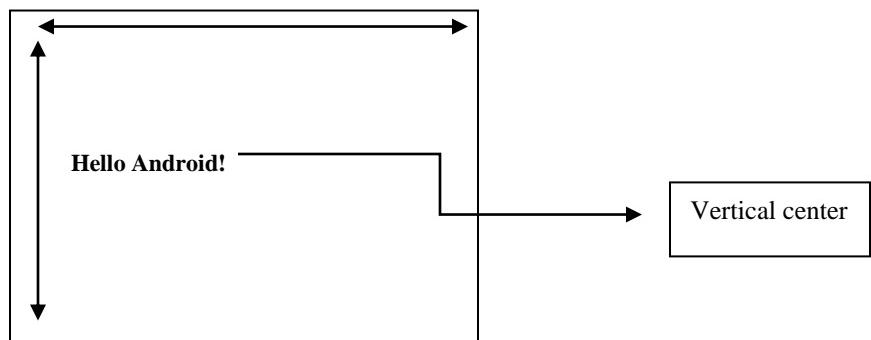
If replace the statement

```
    android:layout_centerHorizontal="true"
```

by the statement

```
    android:layout_centerVertical="true"
```

Then the output on the screen is:



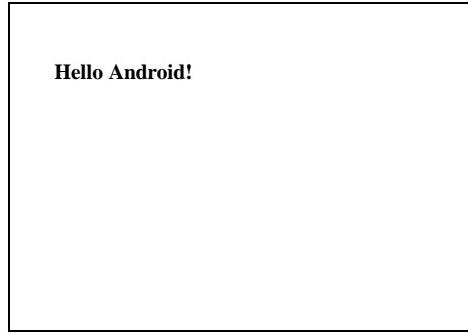
If you replace the statement

```
    android:layout_centerHorizontal="true"
```

by the statement

```
    android:layout_leftHorizontal="true"
```

Then the output on the screen is:



Suppose if you add the statement

```
    android:layout_marginTop="30dp"
```

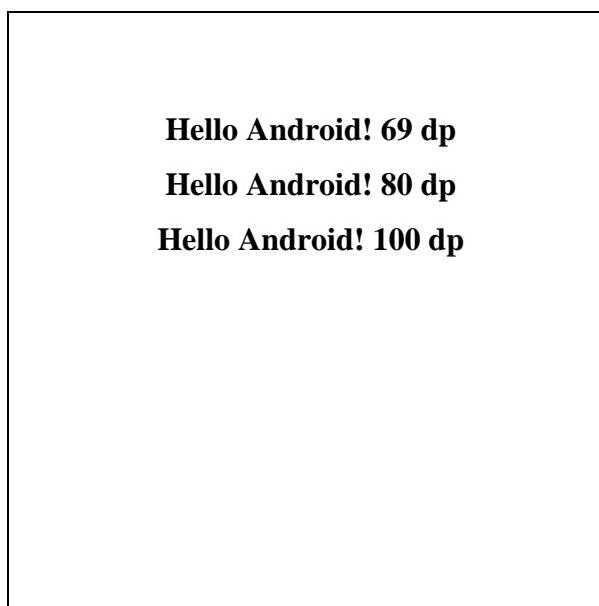
after the statement

```
        android:layout_centerHorizontal="true"
```

i.e.,

```
<TextView  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_centerHorizontal="true"  
    android:layout_marginTop="30dp"  
    android:text="Hello Android!"  
    android: textAppearance ="?android:attr/textAppearanceSmall"  
    android:textStyle="bold"  
    android:textColor="#33b5e5"  
    android:textSize="50sp"  
/>
```

Then the output on the screen is:

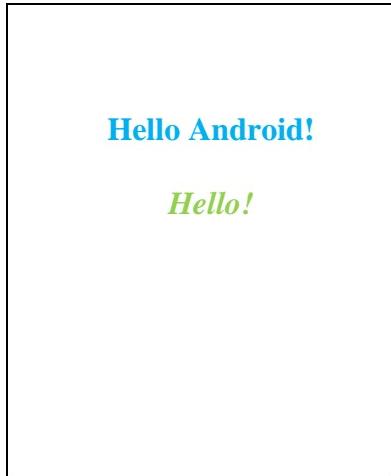


What will be the output on the screen if:

```
<TextView
    android:layout_width="wrap_content" android:layout_height="wrap_content"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="30dp"
    android:text="Hello Android!"
    android: textAppearance="?android:attr/textAppearanceSmall"
    android:textStyle="bold"
    android:textColor="#33b5e5"
    android:textSize="50sp"
/>

<TextView
    android:layout_width="wrap_content" android:layout_height="wrap_content"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="60dp"
    android:text="Hello!"
    android: textAppearance="?android:attr/textAppearanceLarge"
    android:textStyle="bold|italic"
    android:textColor="#33b575"
    android:textSize="90sp" />
```

Answer:



What is the difference between SQL and SQLite?

- **SQL** (Structured Query Language) — a standard interactive and programming language for getting information from a database
- **SQLite** – database

If you replace the statement

```
    android:layout_centerHorizontal="true"
```

by the statement

```
    android:layout_alignParentLeft = "true"
```

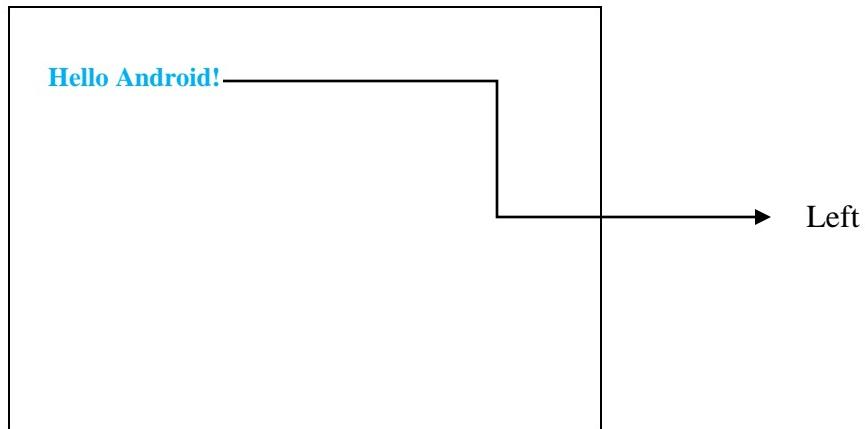
i.e., if

```
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentLeft = "true"
    android:layout_marginTop="30dp"
    android:text="Hello Android!"
    android:textAppearance ="?android:attr/textAppearanceSmall"
    android:textStyle="bold"
    android:textColor="#33b5e5"
    android:textSize="25sp"/>
```

is written instead of

```
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="30dp"
    android:text="Hello Android!"
    android:textAppearance ="?android:attr/textAppearanceSmall"
    android:textStyle="bold"
    android:textColor="#33b5e5"
    android:textSize="25sp"/>
```

Then the output on the screen is:



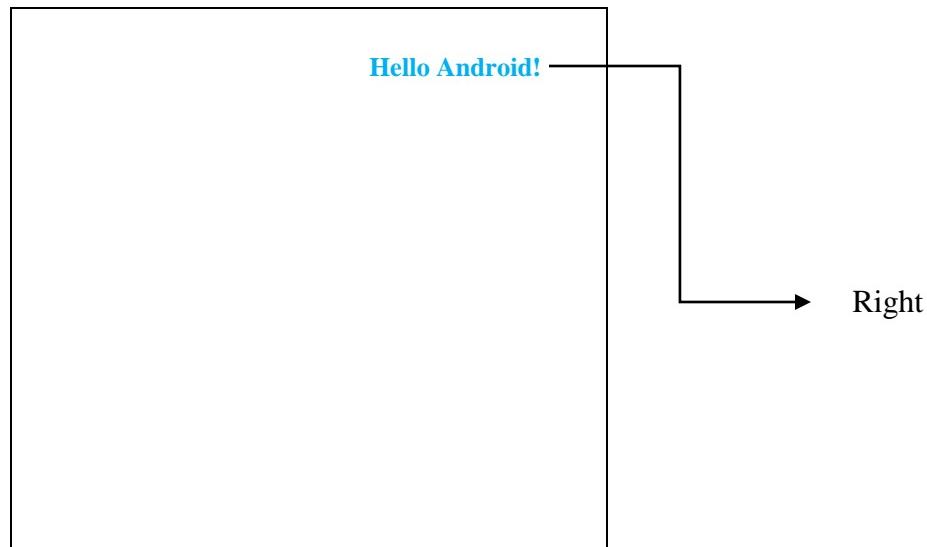
If you replace the statement

```
    android:layout_centerHorizontal="true"
```

by the statement

```
    android:layout_alignParentRight = "true"
```

Then the output on the screen is:



If you replace the statement

```
    android:layout_centerHorizontal="true"
```

by the statement

```
    android:layout_alignParentBottom = "true"
```

Then the text

Hello Android! on the screen will become invisible on the screen.

And if replace the statement

```
    android:layout_alignParentBottom = "true"
```

by the statement

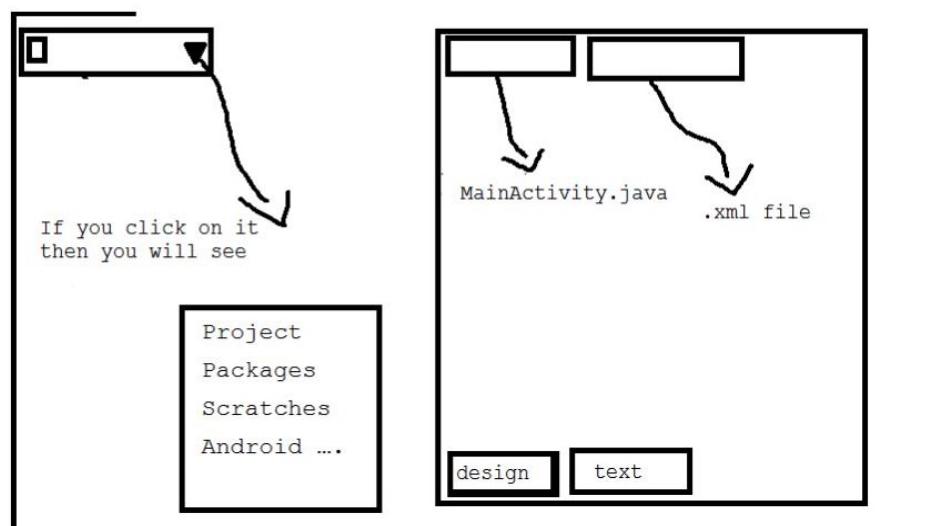
```
    android:layout_alignParentTop = "true"
```

Then the text **Hello Android!** will become visible on the screen.

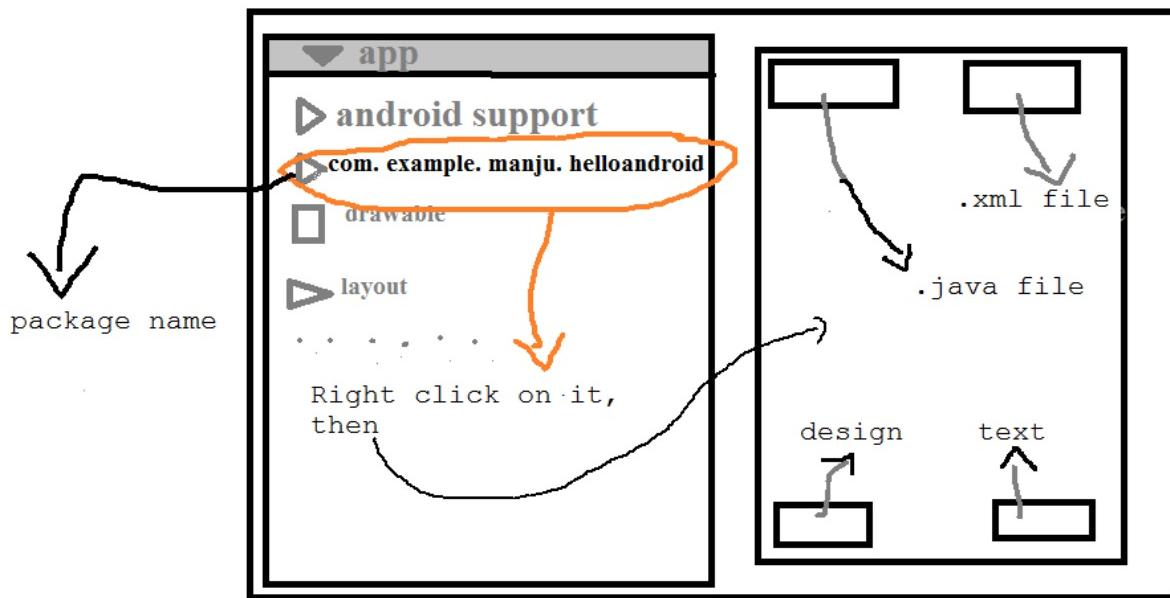
- **How to Add an Image to Your Android Application**

First you need to create a **raw** folder and for that you need to follow the following steps:

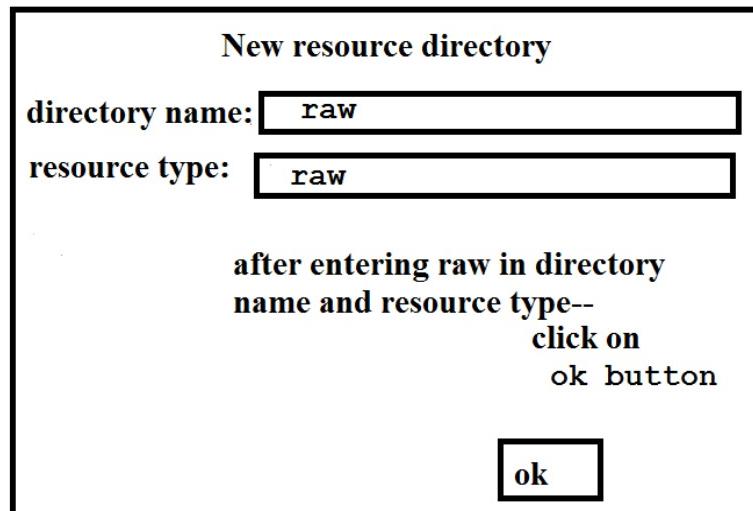
Open **Android studio** and you will see the following screen:



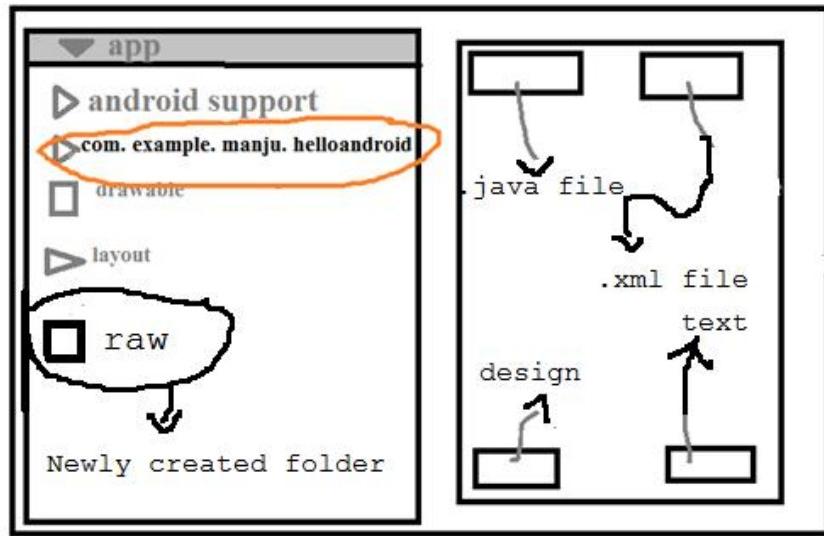
If you select **packages** then you will see



If you select new and click on it and select Android resource directory and click on it – a new resource directory window will be opened



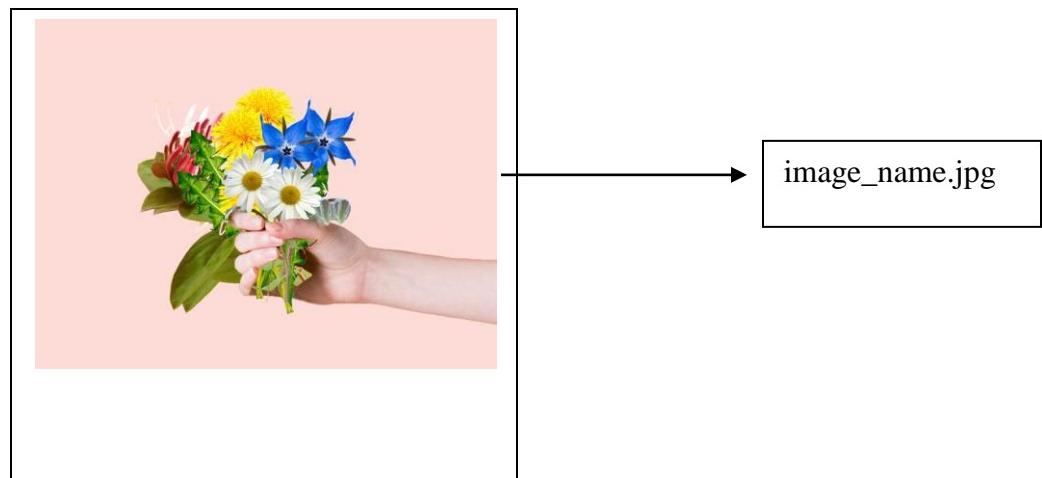
After clicking on ok button, a new folder named raw will be created and you can see it as shown in the figure below:



Now you copy the image (i.e., **image_name.jpg**) from the desktop and paste in the newly created folder (i.e., in raw folder) and open .xml file and paste the following code:

```
<ImageView
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:src="@raw/image_name" />
```

in it. Then the output on the screen is:



If you want to drag the image downwards, then you have to add the statement

```
    android:layout_marginTop="100dp"
```

after the statement

```
    android:layout_height="wrap_content"
```

i.e.,

```
<ImageView  
    android:layout_width="fill_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginTop="100dp"  
    android:src="@raw/image_name" />
```

If you replace **100dp** by **200 dp** i.e., if you replace the statement

```
    android:layout_marginTop="100dp"
```

by the statement

```
    android:layout_marginTop="200dp"
```

Then the image will move downwards on the screen i.e.,



Suppose if you have copied the image (i.e., **image_name.jpg**) from the desktop and pasted it in the drawable folder, then you need to replace the statement

```
    android:src="@raw/image_name"
```

by the statement

```
    android:src="@drawable/image_name"
```

otherwise no image will be displayed on the screen (because you have saved the image in drawable folder not in the raw folder).

Note:

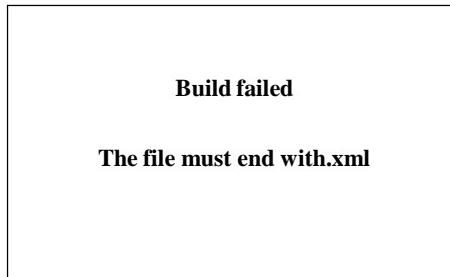
Suppose if you copy the image from the desktop and paste it in the layout folder, then you have to replace the statement

```
    android:src="@raw/image_name"
```

by the statement

```
    android:src="@layout/image_name"
```

image will be displayed on the screen but when you try to build / generate the .apk file (i.e., .Android application package file), error will be displayed on the screen stating that



So please avoid saving the image in layout folder.

If you replace the statements

```
    android:layout_width="fill_parent"  
    android:layout_height="wrap_content"
```

by the statements

```
    android:layout_width="100dp"  
    android:layout_height="100dp"
```

i.e.,

```
<ImageView  
    android:layout_width="100dp"  
    android:layout_height="100dp"  
    android:layout_marginTop="100dp"  
    android:src="@raw/image_name" />
```

Then the **output on the screen** is:



To drag the image to the center you need to add the following code:

```
    android:layout_centerHorizontal="true"
```

i.e.,

```
<ImageView  
    android:layout_width="100dp"  
    android:layout_height="100dp"  
    android:layout_centerHorizontal="true"  
    android:layout_marginTop="100dp"  
    android:src="@raw/image_name" />
```

- **How to Add a Video to Your Android Application**

First you need to copy the video (i.e., **video.mp4**) from the desktop and paste it in the raw folder and then you have to replace the existing codes in activity_main.xml file by the following codes:

```
<?xml version="1.0" encoding="utf-8"?>  
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"  
    xmlns:tools="http://schemas.android.com/tools"  
    android:layout_width="match_parent"  
    android:layout_height="match_parent"
```

```

    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.example.manju.Helloandroid.MainActivity">

    <VideoView
        android:id="@+id/videoView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerVertical="true"
        android:layout_centerHorizontal="true" />

    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerVertical="true"
        android:layout_centerHorizontal="true"
        android:background="@android:color/transparent" />

</RelativeLayout>

```

and after replacing the above codes in activity_main.xml file, you need to replace the existing codes below package name (i.e., **com.example.manju.Helloandroid**) in **MainActivity.java** by the following codes:

```

import android.graphics.PixelFormat;
import android.net.Uri;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.MediaController;
import android.widget.VideoView;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Button buttonPlayVideo2 = (Button) findViewById(R.id.button1);

```

```
getWindow().setFormat(PixelFormat.UNKNOWN);
//displays a video file

    VideoView mVideoView2 = (VideoView) findViewById(R.id.videoView1);
    String uriPath2 = "android.resource://com.example.manju.Helloandroid/" +
R.raw.bvideo;
    Uri uri2 = Uri.parse(uriPath2);
    mVideoView2.setVideoURI(uri2);
    mVideoView2.requestFocus();
    mVideoView2.start();
    buttonPlayVideo2.setOnClickListener(new Button.OnClickListener() {
        @Override
        public void onClick(View v) {
            VideoView mVideoView2 = (VideoView) findViewById(R.id.videoView1);
// VideoView mVideoView = new VideoView(this);
            String uriPath = "android.resource://com.example.manju.Helloandroid/" +
R.raw.video;
            Uri uri2 = Uri.parse(uriPath);
            mVideoView2.setVideoURI(uri2);
            mVideoView2.requestFocus();
            mVideoView2.start();
        }
    });
}
}
```

Then if you run the application – video will be played on the emulator as shown in the figure below.



Video
playing on
the emulator

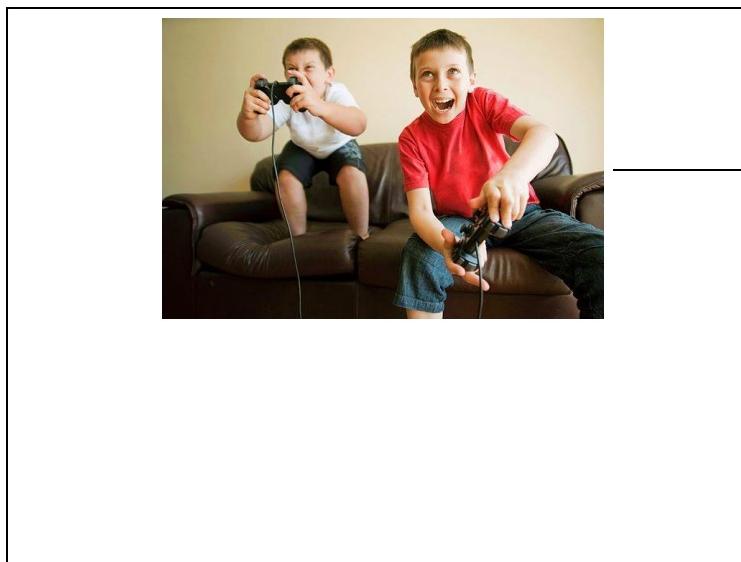
If you replace the statements

```
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"
```

by the statements

```
    android:layout_width="500px"  
    android:layout_height="500px" ←
```

Then the output on the screen is:



Video screen is
reduced because
of the code:

Note:

If you replace the file **video.mp4** in the raw folder by the file **music.mp3**, then you should rewrite the above codes after the package name in .java file as follows:

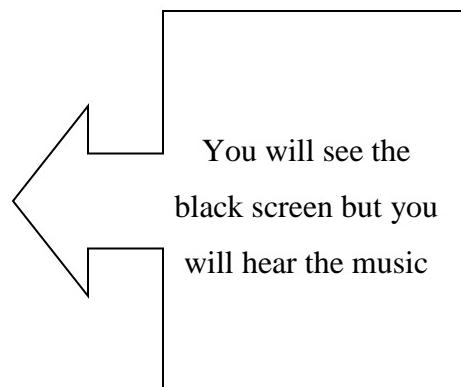
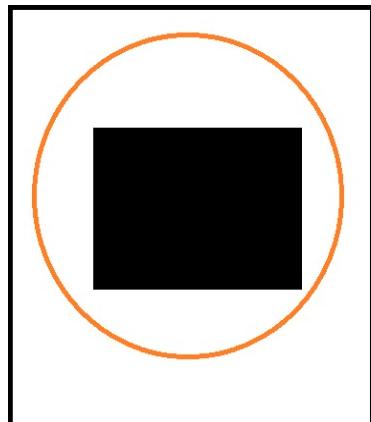
```
import android.graphics.PixelFormat;  
import android.net.Uri;  
import android.support.v7.app.AppCompatActivity;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.MediaController;  
import android.widget.VideoView;  
  
public class MainActivity extends AppCompatActivity {
```

```

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    Button buttonPlayVideo2 = (Button) findViewById(R.id.button1);
    getWindow().setFormat(PixelFormat.UNKNOWN);
    //displays a video file
    VideoView mVideoView2 = (VideoView) findViewById(R.id.videoView1);
    String uriPath2 = "android.resource://com.example.manju.helloandroid/" +
R.raw.music;
    Uri uri2 = Uri.parse(uriPath2);
    mVideoView2.setVideoURI(uri2);
    mVideoView2.requestFocus();
    mVideoView2.start();
    buttonPlayVideo2.setOnClickListener(new Button.OnClickListener() {
        @Override
        public void onClick(View v) {
            VideoView mVideoView2 = (VideoView) findViewById(R.id.videoView1);
            // VideoView mVideoView = new VideoView(this);
            String uriPath = "android.resource://com.example.manju.helloandroid/" +
R.raw.music;
            Uri uri2 = Uri.parse(uriPath);
            mVideoView2.setVideoURI(uri2);
            mVideoView2.requestFocus();
            mVideoView2.start();
        }
    });
}
}

```

Then the output on the screen is:

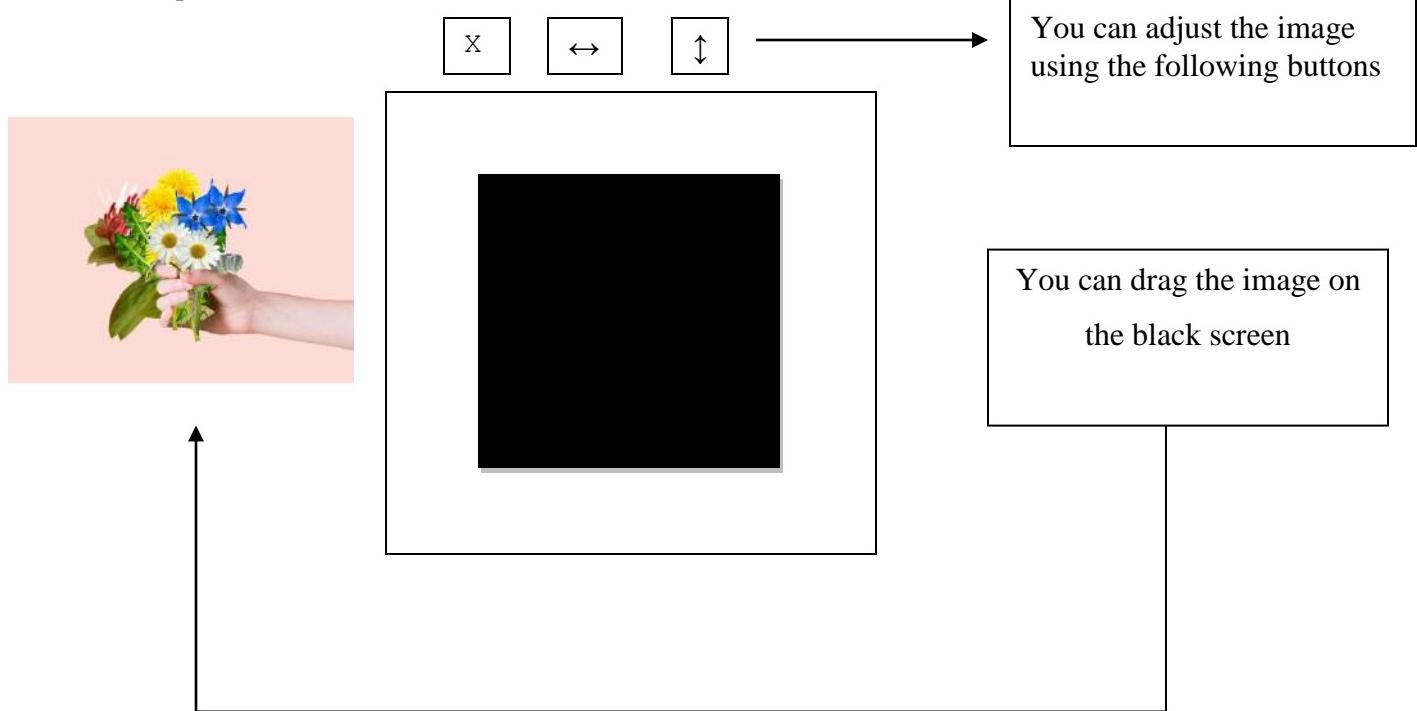


Note:

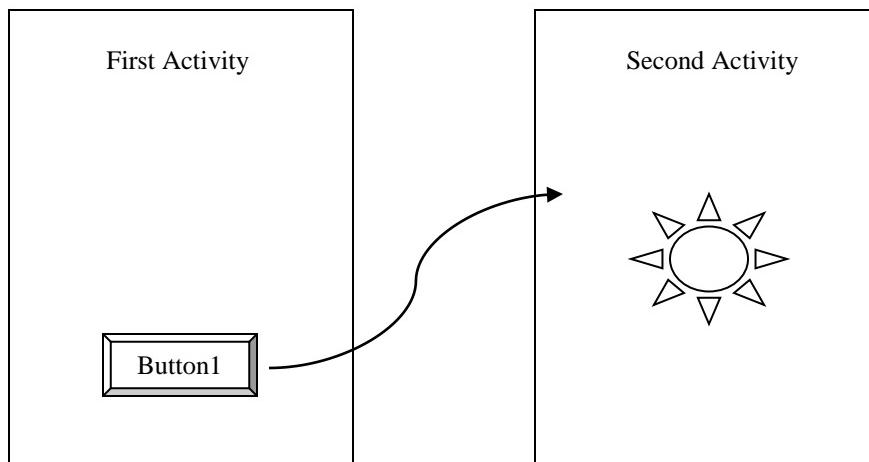
If you add the following code in .xml file:

```
<ImageView  
    android:layout_width="fill_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginTop="100dp"  
    android:src="@raw/image_name" />
```

Then the output on the screen is:



- **How to Create a second activity**



First Activity:

First you need to replace the existing codes after the package name in **Mainactivity.java** file by the following codes:

```
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.content.Intent;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    public void onButtonClick(View v) {
        if (v.getId() == R.id.Bdisplay)

        {
            Intent i = new Intent(MainActivity.this, Display.class);
            startActivity(i);
        }
    }
}
```

And you need to replace the existing codes in activity_main. xml by the following codes:

```
<?xml version="1.0" encoding="utf-8" ?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.example.manju.Helloandroid.MainActivity">

    <Button
```

```

    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Button1"
    android:id="@+id/Bdisplay"
    android:layout_alignParentBottom="true"
    android:layout_centerHorizontal="true"
    android:layout_marginBottom="177dp"
    android:onClick="onButtonClick" />

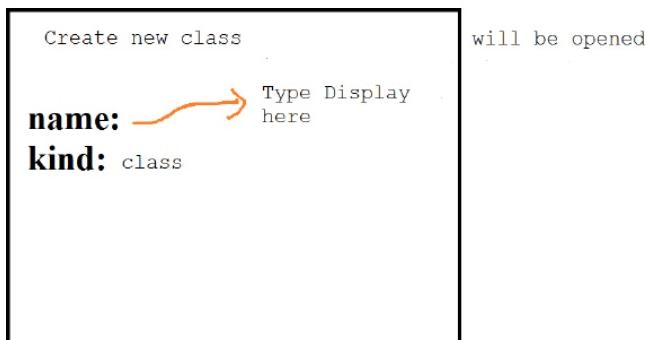
</RelativeLayout>

```

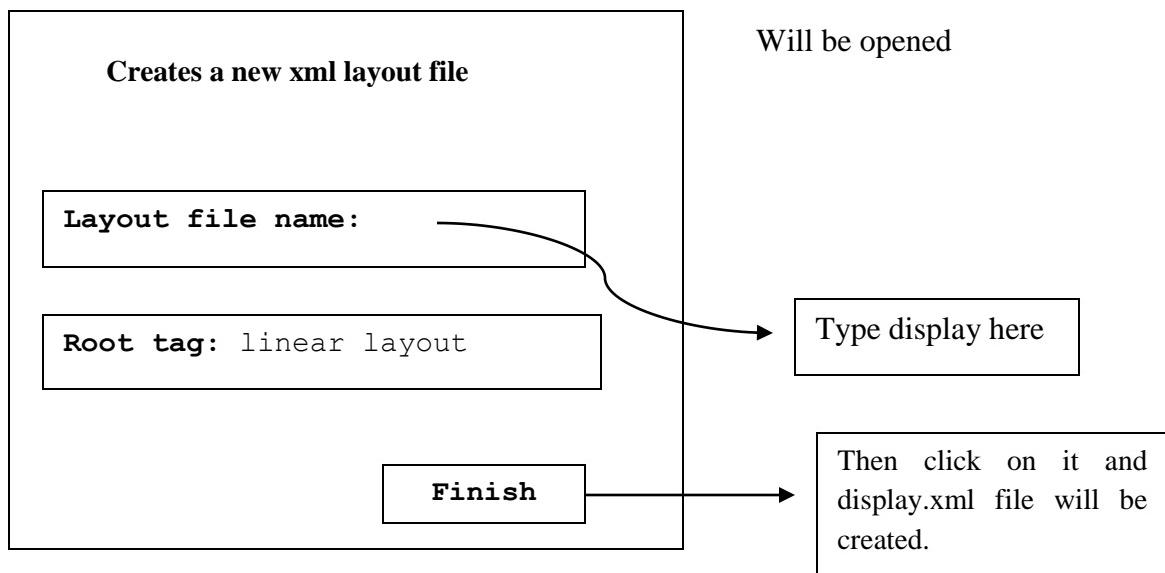
Second Activity:

And Go to packages and under packages select Main activity → right click on it → select New → and select **Java class**

Then



And go to Layout and under layout select activity_main. xml and right click on it → select New → and select → XmL → and select Layout xml file.



And you should place the following codes in **Display.java** file:

```
import android.app.Activity;
import android.os.Bundle;

/**
 * Created by Manju on 3/17/2016.
 */
public class Display extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.display);
    }
}
```

And you should place the following codes in **display.xml** file:

```
<?xml version="1.0" encoding="utf-8" ?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textAppearance="?android:attr/textAppearanceLarge"
        android:text="Our new activity has started"
        android:id="@+id/textView" />
</LinearLayout>
```

And you should add the following code in **android manifest.xml** file:

```
<activity android:name = ".Display"></activity>
```

i.e.,

```
<?xml version="1.0" encoding="utf-8" ?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.manju.helloandroid">

    <application
        android:allowBackup="true"
```

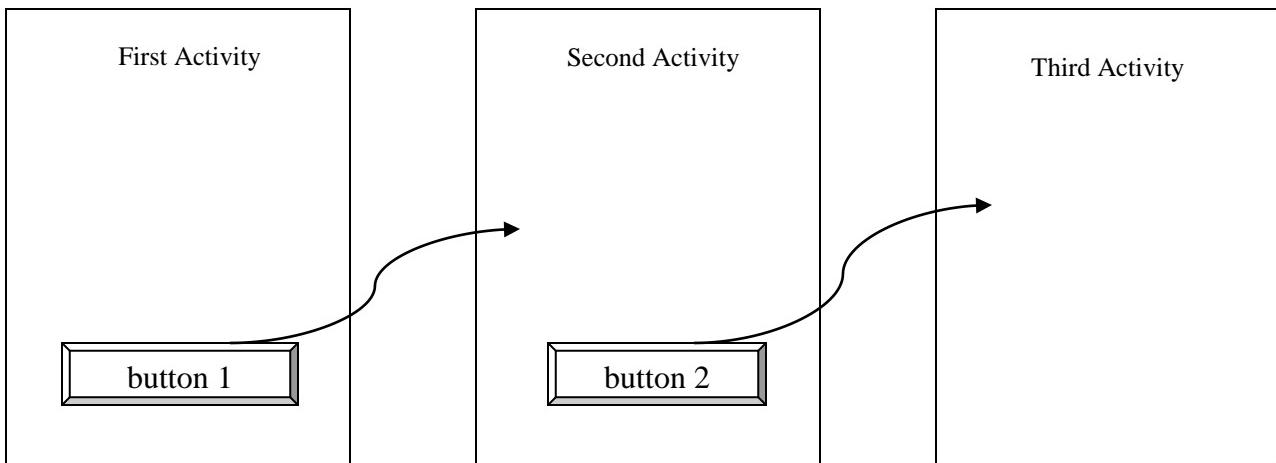
```

    android:icon="@mipmap/ic_launcher"
    android:label="@string/app_name"
    android:supportsRtl="true"
    android:theme="@style/AppTheme">
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
        <activity android:name=".Display"></activity>
    </application>
</manifest>

```

- **How to Create multiple activity**



First Activity:

First you need to replace the existing codes after the package name in **Mainactivity.java** file by the following codes:

```

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.content.Intent;

public class MainActivity extends AppCompatActivity {

```

```

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
}

public void onButtonClick(View v) {
    if (v.getId() == R.id.Bdisplay)

    {
        Intent i = new Intent(MainActivity.this, Display.class);
        startActivity(i);
    }

}
}

```

And you need to replace the existing codes in activity_main. xml by the following codes:

```

<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.example.manju.Helloandroid.MainActivity">

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Button1"
        android:id="@+id/Bdisplay"
        android:layout_alignParentBottom="true"
        android:layout_centerHorizontal="true"
        android:layout_marginBottom="177dp"
        android:onClick="onButtonClick" />

</RelativeLayout>

```

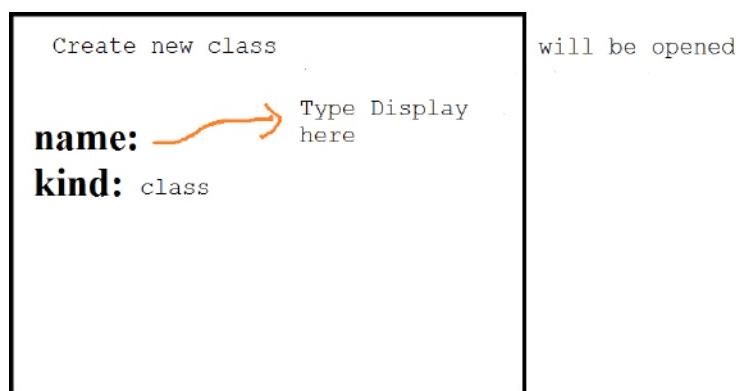
Second Activity:

Go to packages and under packages select **Mainactivity.java** → right click on it → select New → and select Java class

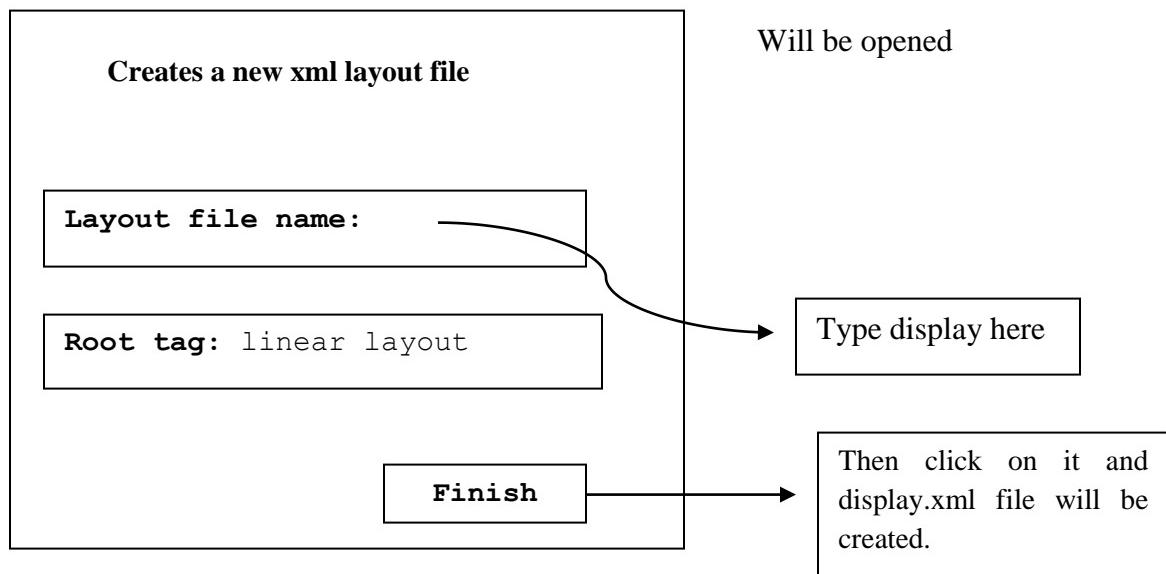
Then

And Go to packages and under packages select Main activity → right click on it → select New → and select Java class

Then



And go to Layout and under layout select **activity_main.xml** and right click on it → select New → and select → XmL → and select Layout xml file.



And you should open the Display.java file and rewrite the existing codes by the following codes:

```

import android.app.Activity;
import android.os.Bundle;
import android.view.View;
import android.content.Intent;

/*
 * Created by Manju on 3/17/2016.
 */
public class Display extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.display);

    }

    public void onButtonClick(View v) {
        if (v.getId() == R.id.Bfile)

        {
            Intent i = new Intent(Display.this, File.class);
            startActivity(i);
        }

    }
}

```

And you should open the **display.xml** file and rewrite the existing codes by the following codes:

```

<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Button2"
        android:id="@+id/Bfile"
        android:layout_alignParentBottom="true"
        android:layout_centerHorizontal="true"

```

```

    android:layout_marginBottom="177dp"
    android:onClick="onButtonClick" />

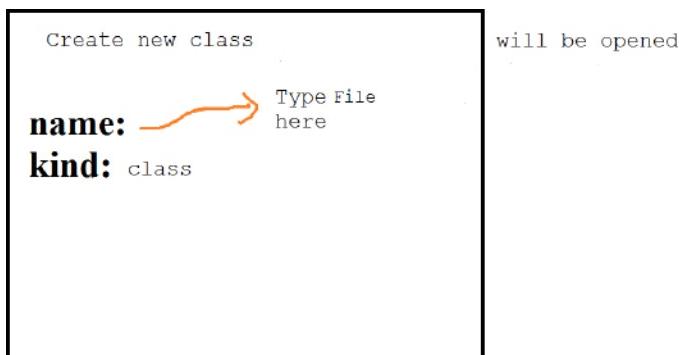
</LinearLayout>

```

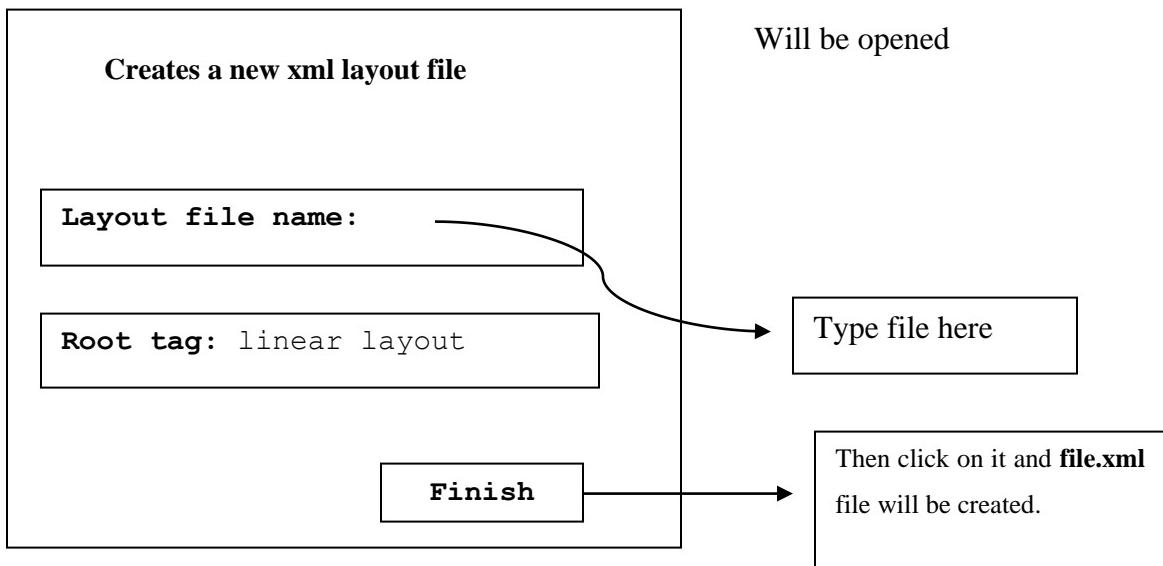
Third Activity:

And Go to packages and under packages select Display.java → right click on it → select New → and select Java class

Then



And go to Layout and under layout select display. xml and right click on it → select New → and select → XML → and select Layout xml file.



And you should place the following codes in **File.java** file:

```

import android.app.Activity;
import android.os.Bundle;

```

```

/**
 * Created by Manju on 3/21/2016.
 */

public class File extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.file);
    }
}

```

And you should place the following codes in **file.xml** file:

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textAppearance="?android:attr/textAppearanceLarge"
        android:text="Our new activity is running"
        android:id="@+id/textView" />
</LinearLayout>

```

And you should add the following codes in **android manifest.xml** file:

```

<activity android:name = ".Display"></activity>
<activity android:name = ".File"></activity>

```

i.e.,

```

<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.manju.helloandroid">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"

```

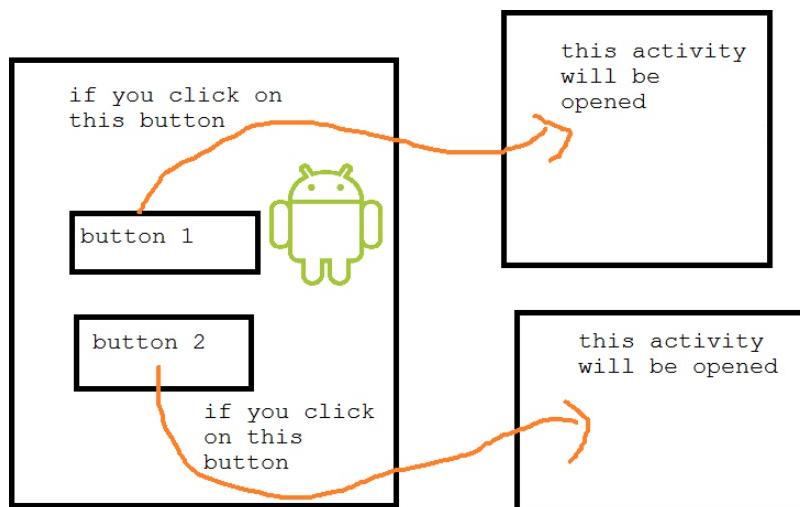
```

    android:supportsRtl="true"
    android:theme="@style/AppTheme">
    <activity android:name=".MainActivity">
        <intent-filter>
            <action android:name="android.intent.action.MAIN" />

            <category android:name="android.intent.category.LAUNCHER" />
        </intent-filter>
    </activity>
    <activity android:name = ".Display"></activity>
    <activity android:name = ".File"></activity>
</application>

</manifest>

```



Code that must be written in Mainactivity.java file

```

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.content.Intent;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

```

```

        setContentView(R.layout.activity_main);

    }

    public void onButtonClick(View v) {
        if (v.getId() == R.id.Bdisplay)

        {

            Intent i = new Intent(MainActivity.this, Display.class);
            startActivity(i);
        }

        if (v.getId() == R.id.Bmanju)

        {

            Intent i = new Intent(MainActivity.this, Manju.class);
            startActivity(i);
        }

    }
}

```

Code that must be written in main_activity.xml file

```

<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.example.manju.helloandroid.MainActivity">

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="button 1"
        android:id="@+id/Bdisplay"
        android:onClick="onButtonClick"
        android:layout_centerVertical="true"
        android:layout_centerHorizontal="true" />

    <Button

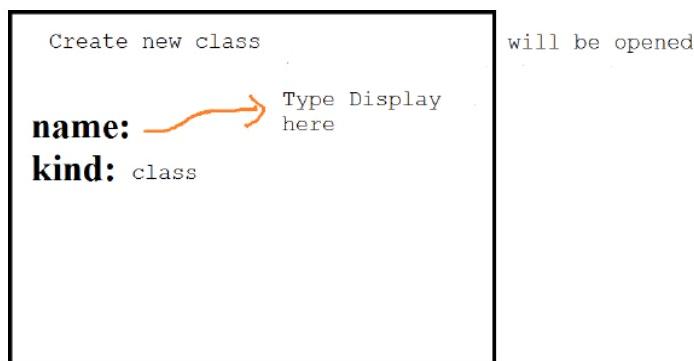
```

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="button 2"
    android:id="@+id/Bmanju"
    android:layout_alignParentBottom="true"
    android:layout_centerHorizontal="true"
    android:layout_marginBottom="177dp"
    android:onClick="onButtonClick" />

</RelativeLayout>
```

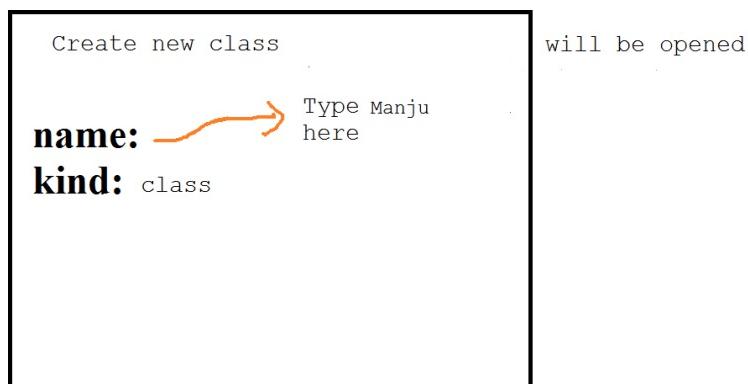
And go to Mainactivity.java → right click on it → select New → and select Java class

Then



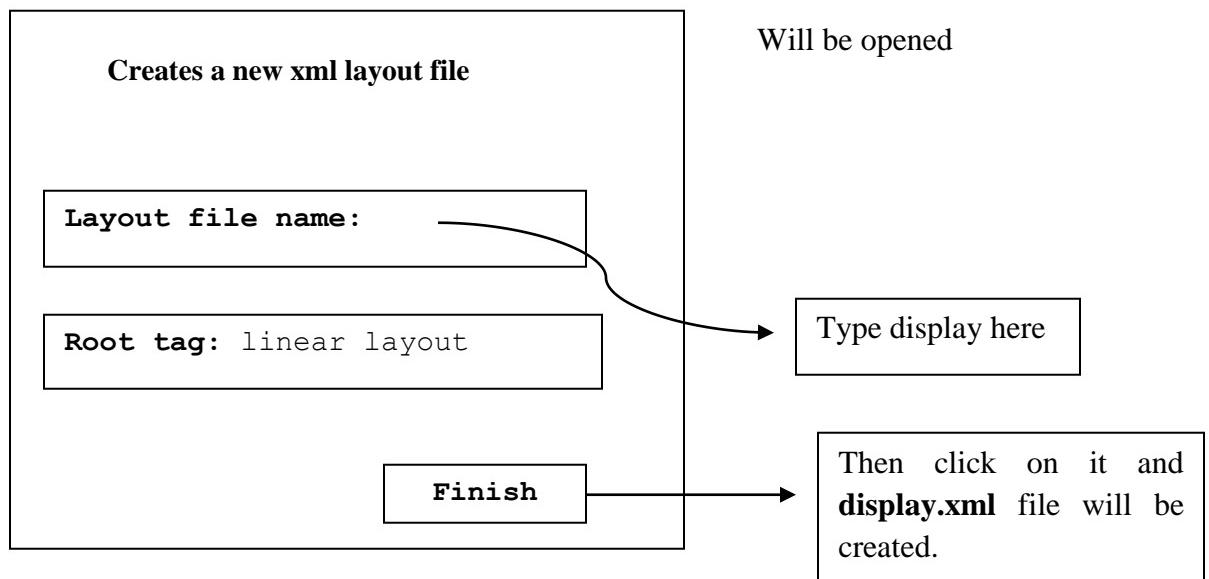
And again go to Mainactivity.java → right click on it → select New → and select Java class

Then

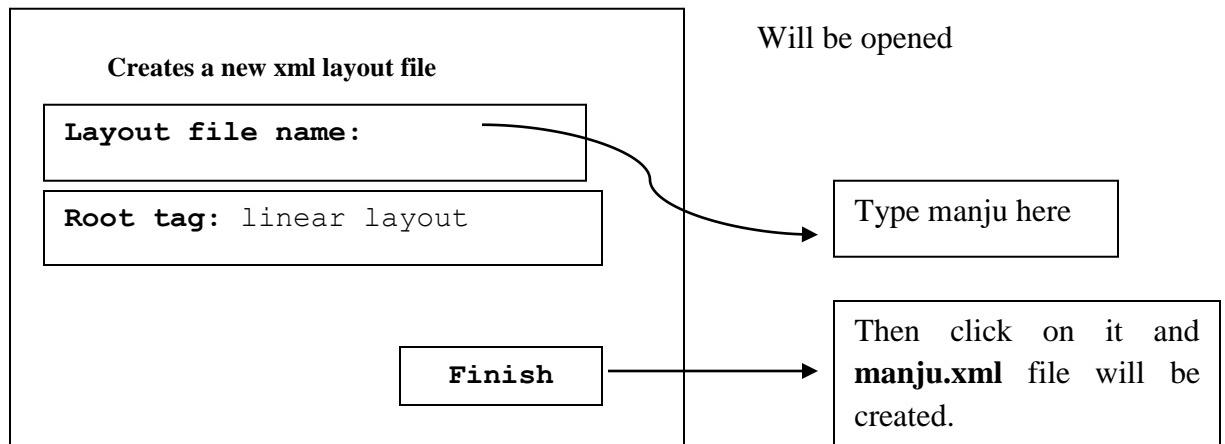


Now Display.java and Manju.java files are created.

And go to Layout and under layout select **main_activity.xml** and right click on it → select New → and select → XML → and select Layout xml file.



And again go to Layout and under layout select **main_activity.xml** and right click on it → select New → and select → XML → and select Layout xml file.



Now **display.xml** and **manju.xml** files are created.

Code that should be written in **Display.java** file:

```
import android.app.Activity;
import android.os.Bundle;

/*
 * Created by Manju on 3/17/2016.

```

```

*/
public class Display extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.display);
    }
}

```

Code that should be written in **display.xml** file:

```

<?xml version="1.0" encoding="utf-8" ?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textAppearance="?android:attr/textAppearanceLarge"
        android:text="Our new activity has started"
        android:id="@+id/textView" />
</LinearLayout>

```

Code that should be written in **Manju.java** file:

```

import android.os.Bundle;
import android.app.Activity;
/**
 * Created by Manju on 3/28/2016.
 */
public class Manju extends Activity{
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.manju);
    }
}

```

Code that should be written in **manju.xml** file:

```

<?xml version="1.0" encoding="utf-8" ?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

```

```

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textAppearance="?android:attr/textAppearanceLarge"
    android:text="Our new activity has ended"
    android:id="@+id/textView" />

</LinearLayout>

```

And in android manifest file you have to add the following codes:

```

<activity android:name = ".Display"></activity>
<activity android:name = ".Manju"></activity>

```

i.e.,

```

<application
    android:allowBackup="true"
    android:icon="@mipmap/ic_launcher"
    android:label="@string/app_name"
    android:supportsRtl="true"
    android:theme="@style/AppTheme">

    <activity
        android:name=".MainActivity"
        android:label="@string/app_name"
        android:theme="@style/AppTheme.NoActionBar">
        <intent-filter>
            <action android:name="android.intent.action.MAIN" />

            <category android:name="android.intent.category.LAUNCHER" />
        </intent-filter>
    </activity>
    <activity android:name = ".Display"></activity>
    <activity android:name = ".Manju"></activity>

</application>

```

Note:

If the program:

```

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;

```

```

import android.view.View;
import android.content.Intent;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    public void onButtonClick(View v) {
        if (v.getId() == R.id.Bdisplay)

        {
            Intent i = new Intent(MainActivity.this, Display.class);
            startActivity(i);
        }

        if (v.getId() == R.id.Bmanju)

        {
            Intent i = new Intent(MainActivity.this, Manju.class);
            startActivity(i);
        }
    }
}

```

is rewritten as:

```

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.content.Intent;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}

```

```

public void onButtonClick(View v) {
    if (v.getId() == R.id.Bdisplay)

    {
        Intent i = new Intent(MainActivity.this, Display.class);
        startActivity(i);
    }
}

public void onButtonClick(View v) {
    if (v.getId() == R.id.Bmanju)

    {
        Intent i = new Intent(MainActivity.this, Manju.class);
        startActivity(i);
    }
}

```

Then execution error will be displayed on the **Emulator** or **force shut down** will result because method

```
public void onButtonClick(View v)
```

is declared twice.

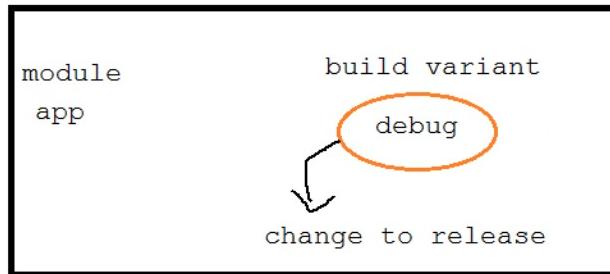
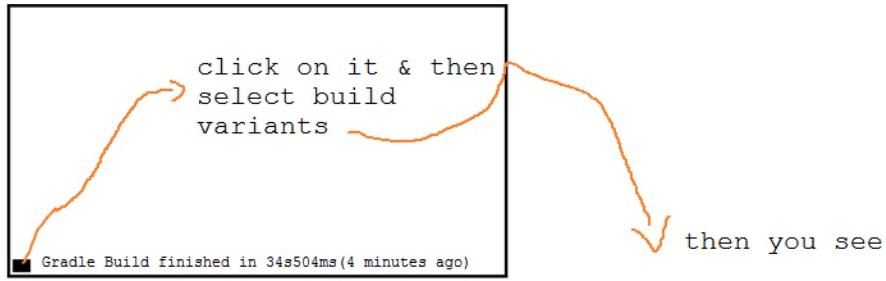
- **How to generate .apk file**

Go to build → then select build apk → Gradle build starts → apk files are generated in few minutes → install and run it on your android mobile set.

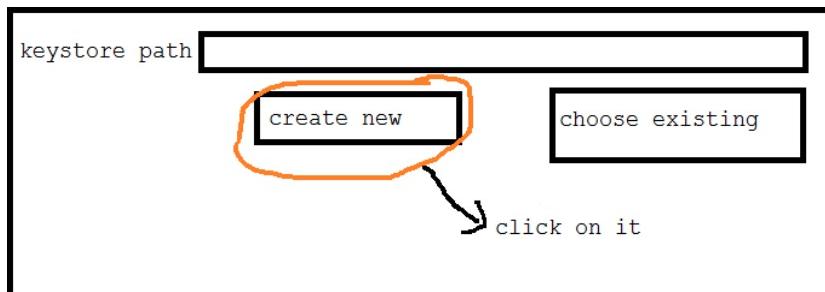


Note:

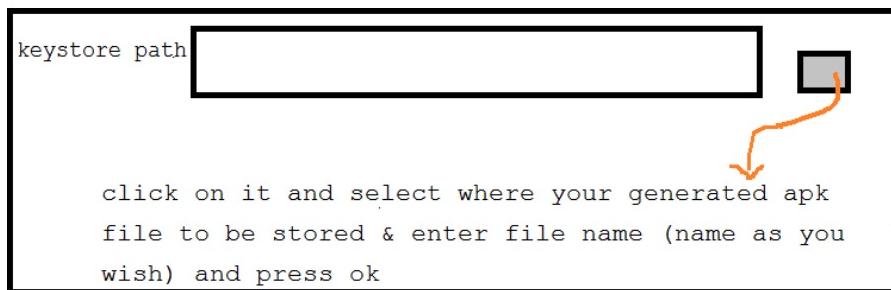
In order to sell your app on **Google play** -- you need to generate signed apk file for that:



Then go to build → select generate signed apk→ then you will see



Then you see New key store window → then fill the details – for example



In Alias → type (say IT means information technology)

Enter the password and confirm the password

Note: always select Validity (years) > 25 years because in order to publish your app in Google play you need to select minimum years of 25.

After filling the details you press OK → then you will see **GENERATE SIGNED APK** window will be opened → press next → then you need to fill the master password (note: you need to remember master password because it is only the evidence the Google play will verify whether you are going to publish your app or not) → after filling the master password , then click on finish → after few minutes of Gradle building → you see the apk file in show folder.

- **Open a website on button click**



First you need to open the manifest file and add the statement

```
<uses-permission android:name="android.permission.INTERNET" />
```

and you need to replace the existing codes in **.xml file** by the following codes:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:fitsSystemWindows="true"
    tools:context="com.example.manju.web.MainActivity"
    android:baselineAligned="false">

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Open Google" />

</LinearLayout>
```

```

        android:layout_height="wrap_content"
        android:text="Browser"
        android:layout_alignParentBottom="true"
        android:layout_centerHorizontal="true"
        android:layout_marginBottom="177dp"
        android:onClick="browser1" />

</LinearLayout>

```

And you should modify the codes below the package name in **MainActivity.java** as follows:

```

import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.support.design.widget.FloatingActionButton;
import android.support.design.widget.Snackbar;
import android.support.v7.app.AppCompatActivity;
import android.support.v7.widget.Toolbar;
import android.view.View;
import android.view.Menu;
import android.view.MenuItem;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    public void browser1(View view) {
        Intent browserIntent = new Intent(Intent.ACTION_VIEW,
        Uri.parse("http://google.com.kh"));
        startActivity(browserIntent);

    }
}

```

Note: since http://google.com.kh is written , Google website will be opened.

Suppose you want to add two buttons (i.e., if you click on button 1, Google website should be opened and if you click on button 2, facebook website should be opened)

Then

Your **.java** file should take the form:

```
import android.content.Intent;
import android.net.Uri;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    public void browser1(View view) {
        Intent browserIntent = new Intent(Intent.ACTION_VIEW,
        Uri.parse("http://google.com.kh"));
        startActivity(browserIntent);

    }

    public void browser2(View view) {
        Intent browserIntent = new Intent(Intent.ACTION_VIEW,
        Uri.parse("http://facebook.com.kh"));
        startActivity(browserIntent);

    }
}
```

and your **.xml** file should appear as:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:fitsSystemWindows="true"
    tools:context="com.example.manju.web.MainActivity"
    android:baselineAligned="false">
```

```

<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Browser"
    android:layout_alignParentBottom="true"
    android:layout_centerHorizontal="true"
    android:layout_marginBottom="177dp"
    android:onClick="browser1" />

<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Browser2"
    android:layout_alignParentBottom="true"
    android:layout_centerHorizontal="true"
    android:layout_marginBottom="130dp"
    android:onClick="browser2" />

</LinearLayout>

```

- **Make a phone call on button click**

First you NEED to open the manifest file and add the statement

```
<uses-permission android:name="android.permission.CALL_PHONE" />
```

and you need to replace the existing codes in activity_main. xml file by the following codes:

```

<?xml version="1.0" encoding="utf-8" ?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:fitsSystemWindows="true"
    tools:context="com.example.manju.web.MainActivity"
    android:baselineAligned="false">

    <Button
        android:id="@+id/buttonCall"
        android:layout_width="wrap_content"

```

```

    android:layout_height="wrap_content"
    android:text="Call1"
    android:layout_alignParentBottom="true"
    android:layout_marginBottom="200dp"
    android:onClick="call" />

<Button
    android:id="@+id/buttonCall1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Call2"
    android:layout_alignParentBottom="true"
    android:layout_marginBottom="150dp"
    android:onClick="call" />

</LinearLayout>

```

And you should modify the codes below the package name in **MainActivity.java** file as follows:

```

import android.content.Intent;

import android.net.Uri;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.view.View.OnClickListener;

public class MainActivity extends AppCompatActivity {
    private Button button;

    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        button = (Button) findViewById(R.id.buttonCall);
        button.setOnClickListener(new OnClickListener() {
            public void onClick(View arg0) {
                Intent callIntent = new Intent(Intent.ACTION_CALL, Uri.parse("tel:" +
"000000123"));
                startActivity(callIntent);
            }
        });
    }
}

```

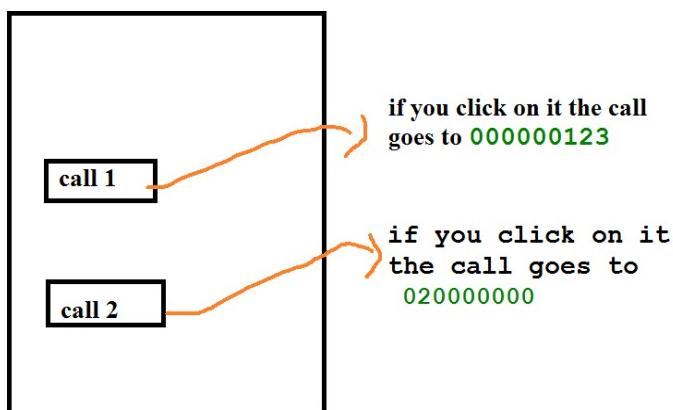
```

        button = (Button) findViewById(R.id.buttonCall1);
        button.setOnClickListener(new OnClickListener() {
            public void onClick(View arg0) {
                Intent callIntent = new Intent(Intent.ACTION_CALL, Uri.parse("tel:" +
"0200000000"));
                startActivity(callIntent);
            }
        });
    }

}

```

The output on the screen is:



- **Send SMS on button click**

First you need to open the manifest file and add the statement

```
<uses-permission android:name="android.permission.SEND_SMS" />
```

and you need to place the following codes in .xml file:

```

<Button
    android:id="@+id/buttonSMS"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="sms"
    android:layout_alignParentBottom="true"

```

```
    android:layout_marginBottom="200dp"
    android:onClick="SMS" />
```

And you should modify the codes below the package name in **MainActivity.java** file as follows:

```
import android.app.Activity;
import android.content.Intent;
import android.graphics.Color;
import android.net.Uri;
import android.os.Bundle;

import android.support.v7.app.AppCompatActivity;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.Button;
import android.view.View.OnClickListener;

public class MainActivity extends AppCompatActivity {
    private Button button;

    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        button = (Button) findViewById(R.id.buttonSMS);
        button.setOnClickListener(new OnClickListener() {
            public void onClick(View arg0) {
                Intent SMSIntent = new Intent(Intent.ACTION_SENDTO, Uri.parse("sms:" +
"9844622855"));
                startActivity(SMSIntent);
            }
        });
    }
}
```

Suppose you want to add two buttons (i.e., if you click on button 1, sms should be sent to one number and if you click on button 2, sms should be sent to another number)

Then

Your **.java** file should take the form:

```
import android.app.Activity;
import android.content.Intent;
import android.graphics.Color;
import android.net.Uri;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.Button;
import android.view.View.OnClickListener;

public class MainActivity extends AppCompatActivity {
    private Button button;

    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        button = (Button) findViewById(R.id.buttonSMS);
        button.setOnClickListener(new OnClickListener() {
            public void onClick(View arg0) {
                Intent SMSIntent = new Intent(Intent.ACTION_SENDTO, Uri.parse("sms:" +
"00000002"));
                startActivity(SMSIntent);
            }
        });
        button = (Button) findViewById(R.id.buttonSMS1);
        button.setOnClickListener(new OnClickListener() {
            public void onClick(View arg0) {
                Intent SMSIntent = new Intent(Intent.ACTION_SENDTO, Uri.parse("sms:" +
"0000065660"));
                startActivity(SMSIntent);
            }
        });
    }
}
```

codes that should be added to **.xml** file:

```

<Button
    android:id="@+id/buttonSMS"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="sms"
    android:layout_alignParentBottom="true"
    android:layout_marginBottom="200dp"
    android:onClick="SMS" />

<Button
    android:id="@+id/buttonSMS1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="sms1"
    android:layout_alignParentBottom="true"
    android:layout_marginBottom="150dp"
    android:onClick="SMS" />

```

- Calculator

activity main.xml file should take the form:

```

<?xml version="1.0" encoding="utf-8" ?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent">
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/linearLayout1"
        android:layout_marginLeft="10pt"
        android:layout_marginRight="10pt"
        android:layout_marginTop="3pt">
        <EditText
            android:layout_weight="1"
            android:layout_height="wrap_content"
            android:layout_marginRight="5pt"
            android:id="@+id/etNum1"
            android:layout_width="match_parent"
            android:inputType="numberDecimal">
        </EditText>
    </LinearLayout>
</LinearLayout>

```

```
<EditText
    android:layout_height="wrap_content"
    android:layout_weight="1"
    android:layout_marginLeft="5pt"
    android:id="@+id/etNum2"
    android:layout_width="match_parent"
    android:inputType="numberDecimal">
</EditText>
</LinearLayout>
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:id="@+id/linearLayout2"
    android:layout_marginTop="3pt"
    android:layout_marginLeft="5pt"
    android:layout_marginRight="5pt">
<Button
    android:layout_height="wrap_content"
    android:layout_width="match_parent"
    android:layout_weight="1"
    android:text="+"
    android:textSize="8pt"
    android:id="@+id	btnAdd">
</Button>

<Button
    android:layout_height="wrap_content"
    android:layout_width="match_parent"
    android:layout_weight="1"
    android:text="-"
    android:textSize="8pt"
    android:id="@+id	btnSub">
</Button>

<Button
    android:layout_height="wrap_content"
    android:layout_width="match_parent"
    android:layout_weight="1"
    android:text="*"
    android:textSize="8pt"
    android:id="@+id	btnMult">
</Button>

<Button
```

```

        android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:layout_weight="1"
        android:text="/"
        android:textSize="8pt"
        android:id="@+id/btnDiv">

    </Button>

</LinearLayout>
<TextView

    android:layout_height="wrap_content"
    android:layout_width="match_parent"
    android:layout_marginLeft="5pt"
    android:layout_marginRight="5pt"
    android:textSize="12pt"
    android:layout_marginTop="3pt"
    android:id="@+id/tvResult"
    android:gravity="center_horizontal">

</TextView>

</LinearLayout>

```

And your **.java** file should take the form:

```

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.os.Bundle;
import android.app.Activity;
import android.text.TextUtils;
import android.view.Menu;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity implements OnClickListener {

    EditText etNum1;
    EditText etNum2;

    Button btnAdd;
    Button btnSub;

```

```

Button btnMult;
Button btnDiv;

TextView tvResult;

String oper = "";

/** Called when the activity is first created. */
@Override
public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    // find the elements
    etNum1 = (EditText) findViewById(R.id.etNum1);
    etNum2 = (EditText) findViewById(R.id.etNum2);

    btnAdd = (Button) findViewById(R.id.btnAdd);
    btnSub = (Button) findViewById(R.id.btnSub);
    btnMult = (Button) findViewById(R.id.btnMult);
    btnDiv = (Button) findViewById(R.id.btnDiv);

    tvResult = (TextView) findViewById(R.id.tvResult);

    // set a listener
    btnAdd.setOnClickListener((OnClickListener) this);
    btnSub.setOnClickListener(this);
    btnMult.setOnClickListener(this);
    btnDiv.setOnClickListener(this);
}

@Override
public void onClick(View v) {
    // TODO Auto-generated method stub
    float num1 = 0;
    float num2 = 0;
    float result = 0;

    // check if the fields are empty
    if (TextUtils.isEmpty(etNum1.getText().toString())
        || TextUtils.isEmpty(etNum2.getText().toString())) {
        return;
}

```

```

// read EditText and fill variables with numbers
num1 = Float.parseFloat(etNum1.getText().toString());
num2 = Float.parseFloat(etNum2.getText().toString());

// defines the button that has been clicked and performs the corresponding
operation

// write operation into oper, we will use it later for output
switch (v.getId()) {
    case R.id.btnAdd:
        oper = "+";
        result = num1 + num2;
        break;
    case R.id.btnSub:
        oper = "-";
        result = num1 - num2;
        break;
    case R.id.btnMult:
        oper = "*";
        result = num1 * num2;
        break;
    case R.id.btnDiv:
        oper = "/";
        result = num1 / num2;
        break;
    default:
        break;
}

// form the output line
tvResult.setText(num1 + " " + oper + " " + num2 + " = " + result);
}
}

```

- **How to get location (latitude and longitude values) and city name?**

Code in the MainActivity.java file:

```

import android.os.Bundle;
import android.app.Activity;
import java.io.IOException;
import java.util.List;
import java.util.Locale;

```

```

import android.app.Activity;
import android.app.AlertDialog;
import android.content.ContentResolver;
import android.content.Context;
import android.content.DialogInterface;
import android.content.Intent;
import android.content.pm.ActivityInfo;
import android.location.Address;
import android.location.Geocoder;
import android.location.Location;
import android.location.LocationListener;
import android.location.LocationManager;
import android.os.Bundle;
import android.provider.Settings;
import android.support.v7.app.AppCompatActivity;
import android.util.Log;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.EditText;
import android.widget.ProgressBar;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity implements OnClickListener {

    private LocationManager locationManager=null;
    private LocationListener locationListener=null;

    private Button btnGetLocation = null;
    private EditText editLocation = null;
    private ProgressBar pb =null;

    private static final String TAG = "Debug";
    private Boolean flag = false;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        //if you want to lock screen for always Portrait mode
        setRequestedOrientation(ActivityInfo
                .SCREEN_ORIENTATION_PORTRAIT);
    }
}

```

```

pb = (ProgressBar) findViewById(R.id.progressBar1);
pb.setVisibility(View.INVISIBLE);

editLocation = (EditText) findViewById(R.id.editTextLocation);

btnGetLocation = (Button) findViewById(R.id.btnLocation);
btnGetLocation.setOnClickListener(this);

locationMangaer = (LocationManager)
getSystemService(Context.LOCATION_SERVICE);

}

@Override
public void onClick(View v) {
    flag = displayGpsStatus();
    if (flag) {

        Log.v(TAG, "onClick");

        editLocation.setText("Please!! move your device to"+
        " see the changes in coordinates."+"\nWait..");

        pb.setVisibility(View.VISIBLE);
        locationListener = new MyLocationListener();

        locationMangaer.requestLocationUpdates(LocationManager.NETWORK_PROVIDER,
5000, 10,locationListener);

    } else {
        alertbox("Gps Status!!!", "Your NETWORK is: OFF");
    }
}

/*----Method to Check GPS is enable or disable -----*/
private Boolean displayGpsStatus() {
    ContentResolver contentResolver = getBaseContext()
        .getContentResolver();
    boolean gpsStatus = Settings.Secure
        .isLocationProviderEnabled(contentResolver,
        LocationManager.NETWORK_PROVIDER);
    if (gpsStatus) {

```

```

        return true;

    } else {
        return false;
    }
}

/*-----Method to create an AlertBox -----*/
protected void alertbox(String title, String mymessage) {
    AlertDialog.Builder builder = new AlertDialog.Builder(this);
    builder.setMessage("Your Device's network is Disable")
        .setCancelable(false)
        .setTitle("** network Status **")
        .setPositiveButton("network On",
            new DialogInterface.OnClickListener() {
                public void onClick(DialogInterface dialog, int id) {
                    // finish the current activity
                    // AlertBoxAdvance.this.finish();
                    Intent myIntent = new Intent(
                        Settings.ACTION_SECURITY_SETTINGS);
                    startActivity(myIntent);
                    dialog.cancel();
                }
            })
        .setNegativeButton("Cancel",
            new DialogInterface.OnClickListener() {
                public void onClick(DialogInterface dialog, int id) {
                    // cancel the dialog box
                    dialog.cancel();
                }
            });
    AlertDialog alert = builder.create();
    alert.show();
}

/*-----Listener class to get coordinates -----*/
private class MyLocationListener implements LocationListener {
    @Override
    public void onLocationChanged(Location loc) {

        editLocation.setText("");
        pb.setVisibility(View.INVISIBLE);
        Toast.makeText(getApplicationContext(), "Location changed : Lat: " +
            loc.getLatitude() + " Lng: " + loc.getLongitude(),
    }
}

```

```

        Toast.LENGTH_SHORT) .show();

String longitude = "Longitude: " +loc.getLongitude();
Log.v(TAG, longitude);
String latitude = "Latitude: " +loc.getLatitude();
Log.v(TAG, latitude);

/*-----to get City-Name from coordinates -----*/
String cityName=null;
Geocoder gcd = new Geocoder(getApplicationContext(),
    Locale.getDefault());
List<Address> addresses;
try {
    addresses = gcd.getFromLocation(loc.getLatitude(), loc
        .getLongitude(), 1);
    if (addresses.size() > 0)
        System.out.println(addresses.get(0).getLocality());
    cityName=addresses.get(0).getLocality();
} catch (IOException e) {
    e.printStackTrace();
}

String s = longitude+"\n"+latitude +
"\n\nCity name is: "+cityName;
editLocation.setText(s);
}

@Override
public void onProviderDisabled(String provider) {
    // TODO Auto-generated method stub
}

@Override
public void onProviderEnabled(String provider) {
    // TODO Auto-generated method stub
}

@Override
public void onStatusChanged(String provider,
    int status, Bundle extras) {
    // TODO Auto-generated method stub
}
}
}

```

Code that you need to add in the manifest file:

```
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />

<uses-permission android:name="android.permission.INTERNET" />
```

Code in the **activity_main.xml** file:

```
<?xml version="1.0" encoding="utf-8" ?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:weightSum="1">

    <TextView
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Get Current Location and City Name"
        android:layout_weight="0.20"
        android:gravity="center"
        android:textSize="20sp" />

    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="0.33"
        android:id="@+id/editTextLocation"
        android:editable="false">
        <requestFocus></requestFocus>
    
```

```

<LinearLayout
    android:id="@+id/layloadingH"
    android:layout_height="wrap_content"
    android:layout_weight="0.20"
    android:layout_width="fill_parent"
    android:gravity="center">
    <ProgressBar
        android:layout_width="wrap_content"
        android:id="@+id/progressBar1"
        android:layout_height="wrap_content"></ProgressBar>
</LinearLayout>
</LinearLayout>

```

Note:

Suppose if you want to add the clock and text time to your app then your .xml file should take the form:

```

<?xml version="1.0" encoding="utf-8" ?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:weightSum="1">
    <TextView
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Get Current Location and City Name"
        android:layout_weight="0.20"
        android:gravity="center"
        android:textSize="20sp" />
    <TextClock
        android:layout_width="82dp"
        android:layout_height="43dp"
        android:id="@+id/textClock"
        android:layout_gravity="center_horizontal" />
    <AnalogClock
        android:layout_width="100dp"
        android:layout_height="100dp"
        android:id="@+id/analogClock"

```

```

        android:layout_gravity="center_horizontal"
        android:layout_weight="0.20" />

<EditText
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_weight="0.33"
    android:id="@+id/editTextLocation"
    android:editable="false">
    <requestFocus></requestFocus>
</EditText>
<LinearLayout
    android:id="@+id/layButtonH"
    android:layout_height="wrap_content"
    android:layout_width="fill_parent"
    android:gravity="center"
    android:layout_weight="0.15">
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Get Location"
        android:id="@+id/btnLocation"></Button>
</LinearLayout>
<LinearLayout
    android:id="@+id/layloadingH"
    android:layout_height="wrap_content"
    android:layout_weight="0.20"
    android:layout_width="fill_parent"
    android:gravity="center">
    <ProgressBar
        android:layout_width="wrap_content"
        android:id="@+id/progressBar1"
        android:layout_height="wrap_content"></ProgressBar>
</LinearLayout>
</LinearLayout>

```

- How to get location and address line, country name, postal code etc.?

Code in MainActivity.java file

```

import android.os.Bundle;
import android.app.Activity;

```

```

import java.io.IOException;
import java.util.List;
import java.util.Locale;
import android.app.Activity;
import android.app.AlertDialog;
import android.content.ContentResolver;
import android.content.Context;
import android.content.DialogInterface;
import android.content.Intent;
import android.content.pm.ActivityInfo;
import android.location.Address;
import android.location.Geocoder;
import android.location.Location;
import android.location.LocationListener;
import android.location.LocationManager;
import android.os.Bundle;
import android.provider.Settings;
import android.support.v7.app.AppCompatActivity;
import android.util.Log;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.EditText;
import android.widget.ProgressBar;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity implements OnClickListener {

    private LocationManager locationManager=null;
    private LocationListener locationListener=null;

    private Button btnGetLocation = null;
    private EditText editLocation = null;
    private ProgressBar pb =null;

    private static final String TAG = "Debug";
    private Boolean flag = false;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}

```

```

//if you want to lock screen for always Portrait mode
setRequestedOrientation(ActivityInfo
    .SCREEN_ORIENTATION_PORTRAIT);

pb = (ProgressBar) findViewById(R.id.progressBar1);
pb.setVisibility(View.INVISIBLE);

editLocation = (EditText) findViewById(R.id.editTextLocation);

btnGetLocation = (Button) findViewById(R.id.btnLocation);
btnGetLocation.setOnClickListener(this);

locationMangaer = (LocationManager)
    getSystemService(Context.LOCATION_SERVICE);

}

@Override
public void onClick(View v) {
    flag = displayGpsStatus();
    if (flag) {

        Log.v(TAG, "onClick");

        editLocation.setText("Please!! move your device to"+
            " see the changes in coordinates."+"\nWait..");

        pb.setVisibility(View.VISIBLE);
        locationListener = new MyLocationListener();

        locationMangaer.requestLocationUpdates(LocationManager.NETWORK_PROVIDER,
5000, 10,locationListener);

    } else {
        alertbox("Gps Status!!!", "Your NETWORK is: OFF");
    }
}

/*----Method to Check GPS is enable or disable -----*/
private Boolean displayGpsStatus() {
    ContentResolver contentResolver = getBaseContext()
        .getContentResolver();

```

```

boolean gpsStatus = Settings.Secure
    .isLocationProviderEnabled(contentResolver,
        LocationManager.NETWORK_PROVIDER);

if (gpsStatus) {
    return true;
}

} else {
    return false;
}

}

/*-----Method to create an AlertBox -----*/
protected void alertbox(String title, String mymessage) {
    AlertDialog.Builder builder = new AlertDialog.Builder(this);
    builder.setMessage("Your Device's network is Disable")
        .setCancelable(false)
        .setTitle("** network Status **")
        .setPositiveButton("network On",
            new DialogInterface.OnClickListener() {
                public void onClick(DialogInterface dialog, int id) {
                    // finish the current activity
                    // AlertBoxAdvance.this.finish();
                    Intent myIntent = new Intent(
                        Settings.ACTION_SECURITY_SETTINGS);
                    startActivity(myIntent);
                    dialog.cancel();
                }
            })
        .setNegativeButton("Cancel",
            new DialogInterface.OnClickListener() {
                public void onClick(DialogInterface dialog, int id) {
                    // cancel the dialog box
                    dialog.cancel();
                }
            });
    AlertDialog alert = builder.create();
    alert.show();
}

/*-----Listener class to get coordinates -----*/
private class MyLocationListener implements LocationListener {
    @Override
    public void onLocationChanged(Location loc) {

```

```

editLocation.setText("");
pb.setVisibility(View.INVISIBLE);
Toast.makeText(getApplicationContext(), "Location changed : Lat: " +
        loc.getLatitude() + " Lng: " + loc.getLongitude(),
        Toast.LENGTH_SHORT).show();
String longitude = "Longitude: " +loc.getLongitude();
Log.v(TAG, longitude);
String latitude = "Latitude: " +loc.getLatitude();
Log.v(TAG, latitude);

/*-----to get City-Name from coordinates -----*/
String L = null;
String M = null;
String N = null;
String O = null;
String P = null;
String Q = null;
String A = null;
Geocoder gcd = new Geocoder(getApplicationContext(),
        Locale.getDefault());
List<Address> addresses;
try {
    addresses = gcd.getFromLocation(loc.getLatitude(), loc
            .getLongitude(), 1);
    if (addresses.size() > 0)
        System.out.println(addresses.get(0).getLocality());
    L = addresses.get(0).getAddressLine(0);
    M = addresses.get(0).getSubLocality();
    N = addresses.get(0).getLocality();
    O = addresses.get(0).getSubAdminArea();
    P = addresses.get(0).getPostalCode();
    Q = addresses.get(0).getAdminArea();
    A = addresses.get(0).getCountryName();
} catch (IOException e) {
    e.printStackTrace();
}

String s = longitude+"\n"+latitude +
        "\n\n" + L + "\n\n" + M + "\n\n" + N +"\n\n" + O + "\n\n"
        "+ P + "\n\n" + Q + "\n\n" + A;

editLocation.setText(s);
}

```

```

@Override
public void onProviderDisabled(String provider) {
    // TODO Auto-generated method stub
}

@Override
public void onProviderEnabled(String provider) {
    // TODO Auto-generated method stub
}

@Override
public void onStatusChanged(String provider,
                            int status, Bundle extras) {
    // TODO Auto-generated method stub
}
}

}

```

- **Date & time display**

Code in MainActivity.java file:

```

import java.util.Calendar;
import java.util.Date;
import android.app.Activity;
import android.os.Bundle;
import android.text.InputType;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    Button btnCTime;
    TextView txtCTime;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}

```

```

btnCTime=(Button) findViewById(R.id.btnGenCurTime);
txtCTime=(TextView) findViewById(R.id.txtShowCurTime);
txtCTime.setInputType(InputType.TYPE_NULL);
btnCTime.setOnClickListener(new OnClickListener() {
    @Override
    public void onClick(View vw) {
        txtCTime.setText(new Date().toString());
    }
}) ;
}
}

```

Code in activity_main.xml file:

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="vertical" >

    <TextView
        android:id="@+id/txtShowCurTime"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" >
        <requestFocus />
    </TextView>

    <Button
        android:id="@+id/btnGenCurTime"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="date" />

```

- Open whatsapp on button CLICK

Code in MainActivity.java file:

```

import android.content.Intent;
import android.os.Bundle;

```

```

import android.support.v7.app.AppCompatActivity;
import android.view.View;

public class MainActivity extends AppCompatActivity {

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    public void browser1(View view) {
        Intent launchIntent =
getPackageManager().getLaunchIntentForPackage("com.whatsapp");
        startActivity(launchIntent);
    }
}

```

Code that you need to add in manifest file:

```
<uses-permission android:name="android.permission.INTERNET" />
```

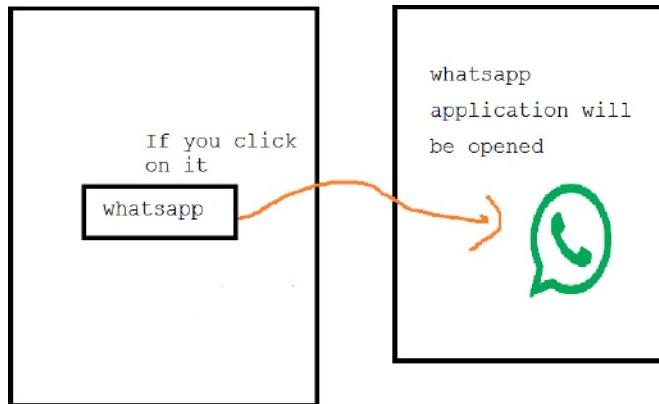
Code that you need to add in .xml file:

```

<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="whatsapp"
    android:layout_alignParentBottom="true"
    android:layout_centerHorizontal="true"
    android:layout_marginBottom="177dp"
    android:onClick="browser1" />

```

Note: you have to download whatsapp application from the website: www.whatsapp.com and install it into your phone – then the output on the screen is:



- **How to set image in background?**

First you need to copy the image file (say **image_name.jpg**) and paste into drawable folder

Then add the following code into your **activity_main.xml** file

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="vertical"
    android:background="@drawable/image_name"

    android:weightSum="1">

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="whatsapp"
        android:layout_alignParentBottom="true"
        android:layout_centerHorizontal="true"
        android:layout_marginBottom="177dp"
        android:onClick="browser1" />
</LinearLayout>
```

- **Scientific CALCULATOR**

Code in MainActivity.java file:

```

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.os.Bundle;
import android.app.Activity;
import android.text.TextUtils;
import android.view.Menu;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity implements OnClickListener {

    EditText etNum1;

    Button btnsqrt;
    Button btncbrt;
    Button btnln;
    Button btnlog;
    Button btnexp;
    Button btnsin;
    Button btncos;
    Button btntan;
    Button btnreci;
    Button btncosec;
    Button btnsec;
    Button btncot;
    Button btnsquare;
    Button btncube;
    Button btnfacto;

    TextView tvResult;

    String oper = "";

    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // find the elements

```

```

etNum1 = (EditText) findViewById(R.id.etNum1);

btnsqrt = (Button) findViewById(R.id.btnsqrt);
btncbrt = (Button) findViewById(R.id.btncbrt);
btnln = (Button) findViewById(R.id.btnln);
btnlog = (Button) findViewById(R.id.btnlog);
btnexp = (Button) findViewById(R.id.btnexp);
btnsin = (Button) findViewById(R.id.btnsin);
btncos = (Button) findViewById(R.id.btncos);
btntan = (Button) findViewById(R.id.btntan);
btnreci = (Button) findViewById(R.id.btnreci);
btncosec = (Button) findViewById(R.id.btncosec);
btnsec = (Button) findViewById(R.id.btnsec);
btncot = (Button) findViewById(R.id.btncot);
btnsquare = (Button) findViewById(R.id.btnsquare);
btncube = (Button) findViewById(R.id.btncube);
btnfacto = (Button) findViewById(R.id.btnfacto);

tvResult = (TextView) findViewById(R.id.tvResult);

// set a listener
btnsqrt.setOnClickListener((OnClickListener) this);
btncbrt.setOnClickListener(this);
btnln.setOnClickListener(this);
btnlog.setOnClickListener(this);
btnexp.setOnClickListener(this);
btnsin.setOnClickListener(this);
btncos.setOnClickListener(this);
btntan.setOnClickListener(this);
btnreci.setOnClickListener(this);
btncosec.setOnClickListener(this);
btnsec.setOnClickListener(this);
btncot.setOnClickListener(this);
btnsquare.setOnClickListener(this);
btncube.setOnClickListener(this);
btnfacto.setOnClickListener(this);

}

@Override
public void onClick(View v) {
    // TODO Auto-generated method stub
}

```

```

double num1 = 0;
double result = 0;

// check if the fields are empty
if (TextUtils.isEmpty(etNum1.getText().toString())) {
    return;
}

// read EditText and fill variables with numbers
num1 = Double.parseDouble(etNum1.getText().toString());

// defines the button that has been clicked and performs the corresponding
operation
// write operation into oper, we will use it later for output
switch (v.getId()) {
    case R.id.btnsqrt:
        oper = "sqrt";
        result = Math.sqrt(num1) ;
        break;
    case R.id.btncbrt:
        oper = "cbrt";
        result = Math.cbrt(num1);
        break;
    case R.id.btnln:
        oper = "ln";
        result = Math.log(num1);
        break;
    case R.id.btnlog:
        oper = "log";
        result = Math.log10(num1);
        break;
    case R.id.btnexp:
        oper = "exp";
        result = Math.exp(num1);
        break;
    case R.id.btnsin:
        oper = "sin";
        result = Math.sin(num1);
        break;
    case R.id.btncos:
        oper = "cos";
        result = Math.cos(num1);
        break;
}

```

```

        case R.id.btnatan:
            oper = "tan";
            result = Math.tan(num1);
            break;
        case R.id.btnreci:
            oper = "1/x";
            result = 1/num1;
            break;
        case R.id.btncosec:
            oper = "cosec";
            result = 1/Math.sin(num1);
            break;
        case R.id.btnsec:
            oper = "sec";
            result = 1/ Math.cos(num1);
            break;
        case R.id.btncot:
            oper = "cot";
            result = 1/Math.tan(num1);
            break;
        case R.id.btnsquare:
            oper = "square";
            result = num1 * num1;
            break;
        case R.id.btncube:
            oper = "cube";
            result = num1 * num1 * num1;
            break;
        case R.id.btnfacto:
            oper = "fact";
            int i, fact =1;
            for(i=1;i<=num1;i++)
                fact = fact *i;
            result = fact;
            break;
        default:
            break;
    }

    // form the output line
    tvResult.setText( num1 + " " + oper + " = " + result);
}
}

```

code in activity_main.xml file

```
●      <?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent">
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:id="@+id/linearLayout1"
    android:layout_marginLeft="10pt"
    android:layout_marginRight="10pt"
    android:layout_marginTop="3pt">
<EditText
    android:layout_weight="1"
    android:layout_height="wrap_content"
    android:layout_marginRight="5pt"
    android:id="@+id/etNum1"
    android:layout_width="match_parent"
    android:inputType="numberDecimal">
</EditText>
</LinearLayout>
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:id="@+id/linearLayout2"
    android:layout_marginTop="3pt"
    android:layout_marginLeft="5pt"
    android:layout_marginRight="5pt">
<Button
    android:layout_height="wrap_content"
    android:layout_width="match_parent"
    android:layout_weight="1"
    android:text="sqrt"
    android:textSize="8pt"
    android:id="@+id/btnsqrt">
</Button>
<Button
```

```
        android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:layout_weight="1"
        android:text="cbrt"
        android:textSize="8pt"
        android:id="@+id/btncbrt">
    </Button>

    <Button
        android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:layout_weight="1"
        android:text="ln"
        android:textSize="8pt"
        android:id="@+id/btnln">
    </Button>

    <Button
        android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:layout_weight="1"
        android:text="log"
        android:textSize="8pt"
        android:id="@+id(btnlog)">
    </Button>

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:id="@+id/linearLayout2"
    android:layout_marginTop="3pt"
    android:layout_marginLeft="5pt"
    android:layout_marginRight="5pt">

    <Button
        android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:layout_weight="1"
        android:text="exp"
        android:textSize="8pt"
        android:id="@+id/btnexp">

```

```
</Button>

<Button
    android:layout_height="wrap_content"
    android:layout_width="match_parent"
    android:layout_weight="1"
    android:text="sin"
    android:textSize="8pt"
    android:id="@+id/btnsin">
</Button>

<Button
    android:layout_height="wrap_content"
    android:layout_width="match_parent"
    android:layout_weight="1"
    android:text="cos"
    android:textSize="8pt"
    android:id="@+id/btncos">
</Button>

<Button
    android:layout_height="wrap_content"
    android:layout_width="match_parent"
    android:layout_weight="1"
    android:text="tan"
    android:textSize="8pt"
    android:id="@+id/btntan">
</Button>

</LinearLayout>
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:id="@+id/linearLayout2"
    android:layout_marginTop="3pt"
    android:layout_marginLeft="5pt"
    android:layout_marginRight="5pt">

    <Button
        android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:layout_weight="1"
        android:text="1/x"
        android:textSize="8pt"

```

```
        android:id="@+id(btnreci">
    </Button>

    <Button
        android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:layout_weight="1"
        android:text="cosec"
        android:textSize="8pt"
        android:id="@+id/btncosec">
    </Button>

    <Button
        android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:layout_weight="1"
        android:text="sec"
        android:textSize="8pt"
        android:id="@+id/btnsec">
    </Button>

    <Button
        android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:layout_weight="1"
        android:text="cot"
        android:textSize="8pt"
        android:id="@+id/btncot">
    </Button>

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:id="@+id/linearLayout2"
    android:layout_marginTop="3pt"
    android:layout_marginLeft="5pt"
    android:layout_marginRight="5pt">

    <Button
        android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:layout_weight="1"
```

```

        android:text="square"
        android:textSize="8pt"
        android:id="@+id/btnsquare">
    </Button>

    <Button
        android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:layout_weight="1"
        android:text="cube"
        android:textSize="8pt"
        android:id="@+id/btncube">
    </Button>

    <Button
        android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:layout_weight="1"
        android:text="factorial"
        android:textSize="8pt"
        android:id="@+id/btnfacto">
    </Button>

</LinearLayout>

```

- Get Information about model number, API level, android version etc.

Code in MainActivity.java file:

```

import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.text.Html;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    String ModelNumber, Board, Brand, Display, FingerPrint, ID, TAGS, Type,
           AndroidVersion, APILevel, CodeName, INCREMENTAL;

    TextView text;

```

```

@Override
public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    ModelNumber = android.os.Build.MODEL;
    Board = android.os.Build.BOARD;
    Brand = android.os.Build.BRAND;
    Display = android.os.Build.DISPLAY;
    FingerPrint = android.os.Build.FINGERPRINT;
    ID = android.os.Build.ID;
    TAGS = android.os.Build.TAGS;
    Type = android.os.Build.TYPE;

    AndroidVersion = android.os.Build.VERSION.RELEASE;
    APILevel = android.os.Build.VERSION.SDK;
    CodeName = android.os.Build.VERSION.CODENAME;
    INCREMENTAL = android.os.Build.VERSIONINCREMENTAL;

    text = (TextView) findViewById(R.id.textView2);

    text.setText(Html.fromHtml("Phone Type" +
        "<br/><br/><font color = 'red';>Model Number : </font></font>" +
        ModelNumber
        + "<br/><font color = 'red';>Board : </font>" + Board
        + "<br/><font color = 'red';>Brand : </font>" + Brand
        + "<br/><font color = 'red';>Display : </font>" + Display
        + "<br/><font color = 'red';>FingerPrint : </font>" + FingerPrint
        + "<br/><font color = 'red';>ID : </font>" + ID
        + "<br/><font color = 'red';>TAGS : </font>" + TAGS
        + "<br/><font color = 'red';>Type : </font>" + Type

        + "<br/>"


        + "<br/><font color = 'red';>Android Version : </font>" +
        AndroidVersion
        + "<br/><font color = 'red';>API Level : </font>" + APILevel
        + "<br/><font color = 'red';>CodeName : </font>" + CodeName
        + "<br/><font color = 'red';>INCREMENTAL : </font>" + INCREMENTAL));
}

}

```

Code in activity_main.xml file:

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent" >

    <TextView
        android:id="@+id/textView2"
        android:textColor="#4169E1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="10sp"
        android:layout_marginTop="20sp" />

</RelativeLayout>

```

- How to take a photo and save it in gallery / SD card / image file in android?

Code in MainActivity.java file:

```

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.content.ActivityNotFoundException;
import android.content.Intent;
import android.graphics.Bitmap;
import android.os.Bundle;
import android.provider.MediaStore;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.ImageView;

public class MainActivity extends AppCompatActivity {
    protected static final int CAMERA_REQUEST = 1;
    ImageView imgView;
    Button btnCamera;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

```

```

setContentView(R.layout.activity_main);

imgView = (ImageView) findViewById(R.id.imageView1);
btnCamera = (Button) findViewById(R.id.btn_camera);
btnCamera.setOnClickListener(new OnClickListener() {

    @Override
    public void onClick(View v) {
        // TODO Auto-generated method stub
        // ***** code for take image

        Intent intent = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);

        intent.putExtra(MediaStore.EXTRA_OUTPUT,
                MediaStore.Images.Media.EXTERNAL_CONTENT_URI.toString());
        try {

            intent.putExtra("return-data", true);
            startActivityForResult(intent, CAMERA_REQUEST);

        } catch (ActivityNotFoundException e) {
            // Do nothing for now
        }

    }
});
```

}

```

protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    if (requestCode == CAMERA_REQUEST) {

        Bundle extras = data.getExtras();
        if (extras != null) {
            Bitmap photo = extras.getParcelable("data");
            // display image in ImageView.
            imgView.setImageBitmap(photo);
            // saveBitmapToFile("/sdcard/crop/cropped_img.jpg", photo);
        }
    }
}
```

}

Code in activity_main.xml file:

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="vertical" >

    <Button
        android:id="@+id	btn_camera"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:text="Take image" />

    <ImageView
        android:id="@+id/imageView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center" />

</LinearLayout>

```

- **IEMI number**

Code in MainActivity.java file:

```

import android.content.Context;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.telephony.TelephonyManager;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity{

    TelephonyManager tel;
    TextView imei;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        tel = (TelephonyManager) getSystemService(Context.TELEPHONY_SERVICE);
    }
}

```

```

    imei = (TextView) findViewById(R.id.textView2);
    imei.setText(tel.getDeviceId().toString());
}
}

```

Code in activity_main.xml file:

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent" >

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="50dp"
        android:textColor="#4169E1"
        android:textSize="18sp"
        android:text="IMEI Number" />

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerInParent="true"
        android:textSize="15sp"
        android:text="IMEI" />

</RelativeLayout>

```

Code that you need to add in the manifest file

```
<uses-permission android:name="android.permission.READ_PHONE_STATE"/>
```

- **Gallery Creation**

Code in MainActivity.java file:

```

import android.content.Context;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.view.View;
import android.view.ViewGroup;
import android.view.ViewGroup.LayoutParams;
import android.view.animation.AnimationUtils;
import android.widget.AdapterView;
import android.widget.AdapterView.OnItemClickListener;
import android.widget.BaseAdapter;
import android.widget.Gallery;
import android.widget.ImageSwitcher;
import android.widget.ImageView;
import android.widget.ViewSwitcher.ViewFactory;

public class MainActivity extends AppCompatActivity implements ViewFactory {

    int imgs[] =
    {
        R.drawable.image_name,
        R.drawable.image_name1,
    };

    ImageSwitcher imgSwitcher;

    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        imgSwitcher = (ImageSwitcher) findViewById(R.id.imageSwitcher1);
        imgSwitcher.setFactory(this);
        imgSwitcher.setInAnimation(AnimationUtils.loadAnimation(this,
                android.R.anim.fade_in));
        imgSwitcher.setOutAnimation(AnimationUtils.loadAnimation(this,
                android.R.anim.fade_out));

        Gallery gallery = (Gallery) findViewById(R.id.gallery1);
        gallery.setAdapter(new ImageAdapter(this));

        gallery.setOnItemClickListener(new OnItemClickListener() {

```

```

    public void onItemClick(AdapterView<?> arg0, View arg1, int
arg2,
                           long arg3) {
        imgSwitcher.setImageResource(imgs[arg2]);
    }
});

}

public class ImageAdapter extends BaseAdapter {

    private Context ctx;

    public ImageAdapter(Context c) {
        ctx = c;
    }

    public int getCount() {

        return imgs.length;
    }

    public Object getItem(int arg0) {

        return arg0;
    }

    public long getItemId(int arg0) {

        return arg0;
    }

    public View getView(int arg0, View arg1, ViewGroup arg2) {

        ImageView iView = new ImageView(ctx);
        iView.setImageResource(imgs[arg0]);
        iView.setScaleType(ImageView.ScaleType.FIT_XY);
        iView.setLayoutParams(new Gallery.LayoutParams(200, 150));
        return iView;
    }
}

public View makeView() {
    ImageView iView = new ImageView(this);
    iView.setScaleType(ImageView.ScaleType.FIT_CENTER);
}

```

```

        iView.setLayoutParams(new ImageSwitcher.LayoutParams
                (LayoutParams.MATCH_PARENT,LayoutParams.MATCH_PARENT));
        iView.setBackgroundColor(0xFF000000);
        return iView;
    }
}

```

Code in activity_main.xml file:

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent" >

    <Gallery
        android:id="@+id/gallery1"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true" />

    <ImageSwitcher
        android:id="@+id/imageSwitcher1"
        android:layout_width="fill_parent"
        android:layout_height="fill_parent"
        android:layout_below="@+id/gallery1"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="5dp" >
    </ImageSwitcher>

</RelativeLayout>

```

- How to get weather forecast inserting location

Code in MainActivity.java file:

```

import android.graphics.Typeface;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.text.Html;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

```

```

    TextView cityField, detailsField, currentTemperatureField, humidity_field,
pressure_field, weatherIcon, updatedField;

    Typeface weatherFont;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        getSupportActionBar().hide();
        setContentView(R.layout.activity_main);

        weatherFont = Typeface.createFromAsset(getApplicationContext().getAssets(),
"fonts/weathericons-regular-webfont.ttf");

        cityField = (TextView) findViewById(R.id.city_field);
        updatedField = (TextView) findViewById(R.id.updated_field);
        detailsField = (TextView) findViewById(R.id.details_field);
        currentTemperatureField =
        (TextView) findViewById(R.id.current_temperature_field);
        humidity_field = (TextView) findViewById(R.id.humidity_field);
        pressure_field = (TextView) findViewById(R.id.pressure_field);
        weatherIcon = (TextView) findViewById(R.id.weather_icon);
        weatherIcon.setTypeface(weatherFont);
    }

    Function.placeIdTask asyncTask =new Function.placeIdTask(new
Function.AsyncResponse() {
    public void processFinish(String weather_city, String weather_description,
String weather_temperature, String weather_humidity, String weather_pressure, String
weather_updatedOn, String weather_iconText, String sun_rise) {

        cityField.setText(weather_city);
        updatedField.setText(weather_updatedOn);
        detailsField.setText(weather_description);
        currentTemperatureField.setText(weather_temperature);
        humidity_field.setText("Humidity: "+weather_humidity);
        pressure_field.setText("Pressure: "+weather_pressure);
        weatherIcon.setText(Html.fromHtml(weather_iconText));

    }
});

    asyncTask.execute(

```

```

    "25.223666 ", "-12.3669858"); //  asyncTask.execute("Latitude", "Longitude")
}

}

```

Code in Function.java file:

```

import android.app.Activity;
import android.os.AsyncTask;
import android.util.Log;

import org.json.JSONException;
import org.json.JSONObject;

import java.io.BufferedReader;
import java.io.InputStreamReader;
import java.net.HttpURLConnection;
import java.net.URL;
import java.text.DateFormat;
import java.util.Date;
import java.util.Locale;

public class Function extends Activity {

    private static final String OPEN_WEATHER_MAP_URL =
    "http://api.openweathermap.org/data/2.5/weather?lat=%s&lon=%s&units=metric";

    private static final String OPEN_WEATHER_MAP_API =
    "16f28aecfde1858cd9bda7e9444e54e8";

    public static String setWeatherIcon(int actualId, long sunrise, long sunset) {
        int id = actualId / 100;
        String icon = "";
        if(actualId == 800) {
            long currentTime = new Date().getTime();
            if(currentTime>=sunrise && currentTime<sunset) {
                icon = "\uf00d;";
            } else {
                icon = "\uf02e;";
            }
        } else {
            switch(id) {

```

```

        case 2 : icon = "\uf01e";
        break;
        case 3 : icon = "\uf01c";
        break;
        case 7 : icon = "\uf014";
        break;
        case 8 : icon = "\uf013";
        break;
        case 6 : icon = "\uf01b";
        break;
        case 5 : icon = "\uf019";
        break;
    }
}

return icon;
}

public interface AsyncResponse {

    void processFinish(String output1, String output2, String output3, String
output4, String output5, String output6, String output7, String output8);
}

public static class placeIdTask extends AsyncTask<String, Void, JSONObject> {

    public AsyncResponse delegate = null; //Call back interface

    public placeIdTask(AsyncResponse asyncResponse) {
        delegate = asyncResponse; //Assigning call back interface through
constructor
    }

    @Override
    protected JSONObject doInBackground(String... params) {

        JSONObject jsonWeather = null;
        try {
            jsonWeather = getWeatherJSON(params[0], params[1]);
        } catch (Exception e) {
            Log.d("Error", "Cannot process JSON results", e);
        }
    }
}

```

```

        return jsonWeather;
    }

    @Override
    protected void onPostExecute(JSONObject json) {
        try {
            if(json != null) {
                JSONObject details =
json.getJSONArray("weather").getJSONObject(0);
                JSONObject main = json.getJSONObject("main");
                DateFormat df = DateFormat.getDateInstance();
                String city = json.getString("name").toUpperCase(Locale.US) + ", "
+ json.getJSONObject("sys").getString("country");
                String description =
details.getString("description").toUpperCase(Locale.US);
                String temperature = String.format("%.2f",
main.getDouble("temp"))+ "°";
                String humidity = main.getString("humidity") + "%";
                String pressure = main.getString("pressure") + " hPa";
                String updatedOn = df.format(new Date(json.getLong("dt")*1000));
                String iconText = setWeatherIcon(details.getInt("id"),
json.getJSONObject("sys").getLong("sunrise") * 1000,
                json.getJSONObject("sys").getLong("sunset") * 1000);

                delegate.processFinish(city, description, temperature, humidity,
pressure, updatedOn, iconText, ""+ (json.getJSONObject("sys").getLong("sunrise") *
1000));
            }
        } catch (JSONException e) {
            //Log.e(LOG_TAG, "Cannot process JSON results", e);
        }
    }
}

public static JSONObject getWeatherJSON(String lat, String lon) {
    try {
        URL url = new URL(String.format(OPEN_WEATHER_MAP_URL, lat, lon));

```

```

HttpURLConnection connection =
    (HttpURLConnection)url.openConnection();

connection.addRequestProperty("x-api-key", OPEN_WEATHER_MAP_API);

BufferedReader reader = new BufferedReader(
    new InputStreamReader(connection.getInputStream()));

StringBuffer json = new StringBuffer(1024);
String tmp="";
while((tmp=reader.readLine())!=null)
    json.append(tmp).append("\n");
reader.close();

JSONObject data = new JSONObject(json.toString());

// This value will be 404 if the request was not
// successful
if(data.getInt("cod") != 200) {
    return null;
}

return data;
} catch(Exception e) {
    return null;
}
}
}

```

Code in activity_main.xml file:

```

<?xml version="1.0"?>

<RelativeLayout
    android:padding="20dp"
    android:background="#3F51B5"
    android:layout_height="match_parent"
    android:layout_width="match_parent"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <TextView android:layout_height="wrap_content"

```

```
    android:layout_width="wrap_content"
    android:textAppearance="?android:attr/textAppearanceLarge"
    android:textColor="#FFFFFF"
    android:layout_centerHorizontal="true"
    android:layout_alignParentTop="true"
    android:id="@+id/city_field"/>

<TextView
    android:layout_height="wrap_content"
    android:layout_width="wrap_content"
    android:textAppearance="?android:attr/textAppearanceMedium"
    android:textColor="#FFFFFF"
    android:layout_centerHorizontal="true"
    android:id="@+id/updated_field"
    android:textSize="13sp"
    android:layout_below="@+id/city_field"/>

<TextView
    android:layout_height="wrap_content"
    android:layout_width="wrap_content"
    android:textAppearance="?android:attr/textAppearanceLarge"
    android:textColor="#FFFFFF"
    android:layout_centerHorizontal="true"
    android:id="@+id/weather_icon"
    android:textSize="90sp"
    android:layout_centerVertical="true"/>

<TextView
    android:layout_height="wrap_content"
    android:layout_width="wrap_content"
    android:textAppearance="?android:attr/textAppearanceLarge"
    android:textColor="#FFFFFF"
    android:layout_centerHorizontal="true"
    android:id="@+id/current_temperature_field"
    android:textSize="50sp"
    android:layout_alignParentBottom="true"/>

    <TextView android:layout_height="wrap_content"
    android:layout_width="wrap_content"
    android:textAppearance="?android:attr/textAppearanceMedium"
    android:textColor="#FFFFFF"
    android:layout_centerHorizontal="true"
    android:id="@+id/details_field"
```

```

        android:layout_below="@+id/weather_icon"/>

        <TextView android:layout_height="wrap_content"
        android:layout_width="wrap_content"
        android:textAppearance="?android:attr/textAppearanceMedium"
        android:textColor="#FFFFFF"
        android:layout_centerHorizontal="true"
        android:id="@+id/humidity_field"
        android:layout_below="@+id/details_field"/>

        <TextView android:layout_height="wrap_content"
        android:layout_width="wrap_content"
        android:textAppearance="?android:attr/textAppearanceMedium"
        android:textColor="#FFFFFF"
        android:layout_centerHorizontal="true"
        android:id="@+id/pressure_field"
        android:layout_below="@+id/humidity_field"/>

</RelativeLayout>

```

Code that you need to write in manifest.xml file:

```
<uses-permission android:name="android.permission.INTERNET"/>
```

- How to create a Login page

MainActivity.java:

```

import android.content.Intent;
import android.graphics.Color;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

```

```

Button b1,b2;
EditText ed1,ed2;

TextView tx1;
int counter = 3;

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    b1=(Button)findViewById(R.id.button);
    ed1=(EditText)findViewById(R.id.editText);
    ed2=(EditText)findViewById(R.id.editText2);

    b2=(Button)findViewById(R.id.button2);
    tx1=(TextView)findViewById(R.id.textView3);
    tx1.setVisibility(View.GONE);

    b1.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if(ed1.getText().toString().equals("admin") &&
               ed2.getText().toString().equals("admin")) {

                Toast.makeText(getApplicationContext(),
                "Redirecting...",Toast.LENGTH_SHORT).show();

                Intent i = new Intent(MainActivity.this, Display.class);
                startActivity(i);
            }

        }
    });

    else{
        Toast.makeText(getApplicationContext(), "Wrong
Credentials",Toast.LENGTH_SHORT).show();

        tx1.setVisibility(View.VISIBLE);
        tx1.setBackgroundColor(Color.RED);
        counter--;
        tx1.setText(Integer.toString(counter));

        if (counter == 0) {
    
```

```

        b1.setEnabled(false);
    }
}
}
});

b2.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        finish();
    }
});
}

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    // Inflate the menu; this adds items to the action bar if it is present.
    getMenuInflater().inflate(R.menu.menu_main, menu);
    return true;
}

@Override
public boolean onOptionsItemSelected(MenuItem item) {
    // Handle action bar item clicks here. The action bar will
    // automatically handle clicks on the Home/Up button, so long
    // as you specify a parent activity in AndroidManifest.xml.

    int id = item.getItemId();

    //noinspection SimplifiableIfStatement
    if (id == R.id.action_settings) {
        return true;
    }
    return super.onOptionsItemSelected(item);
}

}

```

Display.java:

```

import android.app.Activity;
import android.os.Bundle;

```

```

public class Display extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.display);
    }
}

```

activity_main.xml:

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools" android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:paddingBottom="@dimen/activity_vertical_margin"
    tools:context=".MainActivity">

    <TextView android:text="Login" android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/textview"
        android:textSize="35dp"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true" />

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Tutorials point"
        android:id="@+id/textView"
        android:layout_below="@+id/textview"
        android:layout_centerHorizontal="true"
        android:textColor="#ff7aff24"
        android:textSize="35dp" />

    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/editText"
        android:hint="Enter Name"
        android:focusable="true"
        android:textColorHighlight="#ff7eff15"

```

```
    android:textColorHint="#ffff25e6"
    android:layout_marginTop="46dp"
    android:layout_below="@+id/imageView"
    android:layout_alignParentLeft="true"
    android:layout_alignParentStart="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentEnd="true" />

<ImageView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/imageView"
    android:src="@drawable/ic_launcher"
    android:layout_below="@+id/textView"
    android:layout_centerHorizontal="true" />

<EditText
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:inputType="textPassword"
    android:ems="10"
    android:id="@+id/editText2"
    android:layout_below="@+id/editText"
    android:layout_alignParentLeft="true"
    android:layout_alignParentStart="true"
    android:layout_alignRight="@+id/editText"
    android:layout_alignEnd="@+id/editText"
    android:textColorHint="#ffff299f"
    android:hint="Password" />

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Attempts Left:"
    android:id="@+id/textView2"
    android:layout_below="@+id/editText2"
    android:layout_alignParentLeft="true"
    android:layout_alignParentStart="true"
    android:textSize="25dp" />

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="New Text"
```

```

        android:id="@+id/textView3"
        android:layout_alignTop="@+id/textView2"
        android:layout_alignParentRight="true"
        android:layout_alignParentEnd="true"
        android:layout_alignBottom="@+id/textView2"
        android:layout_toEndOf="@+id/textview"
        android:textSize="25dp"
        android:layout_toRightOf="@+id/textview" />

<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="login"
    android:id="@+id/button"
    android:layout_alignParentBottom="true"
    android:layout_toLeftOf="@+id/textview"
    android:layout_toStartOf="@+id/textview"
    android:onClick="onClick"

/>

<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Cancel"
    android:id="@+id/button2"
    android:layout_alignParentBottom="true"
    android:layout_toRightOf="@+id/textview"
    android:layout_toEndOf="@+id/textview" />

</RelativeLayout>

```

display.xml:

```

<?xml version="1.0" encoding="utf-8" ?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"

```

```

        android:textAppearance="?android:attr/textAppearanceLarge"
        android:text="Our new activity has started"
        android:id="@+id/textView" />

    </LinearLayout>

```

String.xml file:

```

<resources>
    <string name="action_settings">Settings</string>
    <string name="hello_world">Hello world!</string>

</resources>

```

Code in Manifest.xml file:

```

<?xml version="1.0" encoding="utf-8" ?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.manju.myapplication123"

    <uses-permission android:name="android.permission.INTERNET" />

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity
            android:name=".MainActivity"
            android:label="@string/app_name"
            android:theme="@style/AppTheme.NoActionBar">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>

        <activity android:name = ".Display"></activity>
    </application>
</manifest>

```

- How to create LOGOUT and EXIT IN Android

Display.java:

```

import android.app.Activity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;

public class Display extends Activity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.display);
    }

    public void logout(View view) {
        Intent i = new Intent(Display.this, MainActivity.class);
        startActivity(i);
    }

    public void exit(View view) {
        moveTaskToBack(true);
        Display.this.finish();
    }
}

```

display.xml:

```

<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context=".Display" >

```

```

<Button
    android:id="@+id/button1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentTop="true"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="146dp"
    android:onClick="logout"
    android:text="logout" />

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignLeft="@+id/button1"
    android:layout_alignParentTop="true"
    android:layout_marginTop="64dp"
    android:text="welcome"
    android:textAppearance="?android:attr/textAppearanceLarge" />
<Button
    android:id="@+id/button2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/button1"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="43dp"
    android:onClick="exit"
    android:text="exit" />
</RelativeLayout>

```

- How to create weather forecast application

MainActivity.java:

```

import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.ProgressBar;
import android.widget.TextView;
import android.widget.Toast;

```

```

public class MainActivity extends AppCompatActivity implements
WeatherDownloader.WeatherDataDownloadListener {

    EditText cityName, cityId, coordinates, zipCode;
    TextView cityNameResult, cityIdResult, coordinatesResult, zipCodeResult;
    Button cityNameSearch, cityIdSearch, coordinatesSearch, zipCodeSearch;
    ProgressBar cityNameProgress, cityIdProgress, coordinatesProgress,
zipCodeProgress;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        setTitle("Current Weather");

        //Bind the views
        cityName = (EditText) findViewById(R.id.city_name);
        cityId = (EditText) findViewById(R.id.city_id);
        coordinates = (EditText) findViewById(R.id.coordinates);
        zipCode = (EditText) findViewById(R.id.zip_code);

        cityNameResult = (TextView) findViewById(R.id.city_result);
        cityIdResult = (TextView) findViewById(R.id.city_id_result);
        coordinatesResult = (TextView) findViewById(R.id.coordinates_result);
        zipCodeResult = (TextView) findViewById(R.id.zip_code_result);

        cityNameSearch = (Button) findViewById(R.id.city_search);
        cityIdSearch = (Button) findViewById(R.id.city_id_search);
        coordinatesSearch = (Button) findViewById(R.id.coordinates_search);
        zipCodeSearch = (Button) findViewById(R.id.zip_code_search);

        cityNameProgress = (ProgressBar) findViewById(R.id.city_progress);
        cityIdProgress = (ProgressBar) findViewById(R.id.city_id_progress);
        coordinatesProgress = (ProgressBar) findViewById(R.id.coordinates_progress);
        zipCodeProgress = (ProgressBar) findViewById(R.id.zip_code_progress);

        cityNameSearch.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                cityNameProgress.setVisibility(View.VISIBLE);
                String cityNameQuery = cityName.getText().toString();
                if(cityNameQuery.length() > 0) {
                    WeatherDownloader downloader = new

```

```

WeatherDownloader(MainActivity.this, WeatherDownloader.Mode.CITYNAME);

downloader.getCurrentWeatherData(getResources().getString(R.string.weather_api_key),
cityNameQuery);
    }
}
});

cityIdSearch.setOnClickListener(new View.OnClickListener() {
@Override
public void onClick(View v) {
    cityIdProgress.setVisibility(View.VISIBLE);
    String cityIdQuery = cityId.getText().toString();
    if(cityIdQuery.length() > 0) {
        WeatherDownloader downloader = new
WeatherDownloader(MainActivity.this, WeatherDownloader.Mode.CITYID);

downloader.getCurrentWeatherData(getResources().getString(R.string.weather_api_key),
cityIdQuery);
    }
}
});

coordinatesSearch.setOnClickListener(new View.OnClickListener() {
@Override
public void onClick(View v) {
    coordinatesProgress.setVisibility(View.VISIBLE);
    String coordinatesQuery = coordinates.getText().toString();
    if(coordinatesQuery.length() > 0) {
        WeatherDownloader downloader = new
WeatherDownloader(MainActivity.this, WeatherDownloader.Mode.COORDINATES);

downloader.getCurrentWeatherData(getResources().getString(R.string.weather_api_key),
coordinatesQuery);
    }
}
});

zipCodeSearch.setOnClickListener(new View.OnClickListener() {
@Override
public void onClick(View v) {
    zipCodeProgress.setVisibility(View.VISIBLE);
    String zipCodeQuery = zipCode.getText().toString();
    if(zipCodeQuery.length() > 0) {

```

```

        WeatherDownloader downloader = new
WeatherDownloader(MainActivity.this, WeatherDownloader.Mode.ZIPCODE);

downloader.getCurrentWeatherData(getResources().getString(R.string.weather_api_key),
zipCodeQuery);
    }
}

});

}

@Override
public void onWeatherDownloadComplete(WeatherData data, WeatherDownloader.Mode
mode) {
    if (mode == WeatherDownloader.Mode.CITYNAME) {
        cityNameProgress.setVisibility(View.GONE);
        cityNameResult.setText(String.format("%.2f",
WeatherUnits.convertToCelsius(data.getMain().getTemp())));
    } else if (mode == WeatherDownloader.Mode.CITYID) {
        cityIdProgress.setVisibility(View.GONE);
        cityIdResult.setText(String.format("%.2f",
WeatherUnits.convertToFahrenheit(data.getMain().getTemp())));
    } else if (mode == WeatherDownloader.Mode.COORDINATES) {
        coordinatesProgress.setVisibility(View.GONE);
        coordinatesResult.setText(data.getMain().getTemp());
    } else if (mode == WeatherDownloader.Mode.ZIPCODE) {
        zipCodeProgress.setVisibility(View.GONE);
        zipCodeResult.setText(String.format("%.2f",
WeatherUnits.convertToFahrenheit(data.getMain().getTemp())));
    }
}

@Override
public void onWeatherDownloadFailed(Exception e) {
    Toast.makeText(MainActivity.this, e.getMessage(), Toast.LENGTH_SHORT).show();
}
}

```

Clouds.java:

```

public class Clouds {
    private String all;

```

```

public String getAll () {
    return all;
}

public void setAll (String all) {
    this.all = all;
}

@Override
public String toString() {
    return "Clouds[all = "+all+"]";
}
}

```

Coord.java:

```

public class Coord {
    private String lon;

    private String lat;

    public String getLon () {
        return lon;
    }

    public void setLon (String lon) {
        this.lon = lon;
    }

    public String getLat () {
        return lat;
    }

    public void setLat (String lat) {
        this.lat = lat;
    }

    @Override
    public String toString() {
        return "Coord [lon = "+lon+", lat = "+lat+"]";
    }
}

```

}

JsonUtil.java:

```
import org.json.JSONArray;
import org.json.JSONException;
import org.json.JSONObject;

public class JsonUtil {

    public static Coord getCoordObjectFromJson(String json) throws JSONException {
        JSONObject jsonObject = new JSONObject(json);
        JSONObject coordJson = jsonObject.getJSONObject("coord");
        if(coordJson != null) {
            Coord coord = new Coord();
            coord.setLon(coordJson.getString("lon"));
            coord.setLat(coordJson.getString("lat"));
            return coord;
        } else {
            return null;
        }
    }

    public static Sys getSysObjectFromJson(String json) throws JSONException {
        JSONObject jsonObject = new JSONObject(json);
        JSONObject sysJson = jsonObject.getJSONObject("sys");
        if(sysJson != null) {
            Sys sys = new Sys();
            sys.setId(sysJson.getString("id"));
            sys.setType(sysJson.getString("type"));
            sys.setMessage(sysJson.getString("message"));
            sys.setCountry(sysJson.getString("country"));
            sys.setSunrise(sysJson.getString("sunrise"));
            sys.setSunset(sysJson.getString("sunset"));
            return sys;
        } else {
            return null;
        }
    }

    public static Weather[] getWeatherObjectFromJson(String json) throws JSONException
```

```

{
    JSONObject jsonObject = new JSONObject(json);
    JSONArray weatherJsonArray = jsonObject.getJSONArray("weather");
    if(weatherJsonArray != null) {
        Weather[] weatherArray = new Weather[weatherJsonArray.length()];
        for (int i = 0; i < weatherJsonArray.length(); i++) {
            Weather weather = new Weather();
            JSONObject weatherJsonObject = weatherJsonArray.getJSONObject(i);
            weather.setId(weatherJsonObject.getString("id"));
            weather.setDescription(weatherJsonObject.getString("description"));
            weather.setIcon(weatherJsonObject.getString("icon"));
            weather.setMain(weatherJsonObject.getString("main"));
            weatherArray[i] = weather;
        }
        return weatherArray;
    } else {
        return null;
    }
}

public static Main getMainObjectFromJson(String json) throws JSONException {
    JSONObject jsonObject = new JSONObject(json);
    JSONObject mainJsonObject = jsonObject.getJSONObject("main");
    if(mainJsonObject != null) {
        Main main = new Main();
        main.setHumidity(mainJsonObject.getString("humidity"));
        main.setPressure(mainJsonObject.getString("pressure"));
        main.setTemp(mainJsonObject.getString("temp"));
        main.setTemp_max(mainJsonObject.getString("temp_max"));
        main.setTemp_min(mainJsonObject.getString("temp_min"));
        return main;
    } else {
        return null;
    }
}

public static Wind getWindObjectFromJson(String json) throws JSONException {
    JSONObject jsonObject = new JSONObject(json);
    JSONObject windJson = jsonObject.getJSONObject("wind");
    if(windJson != null) {
        Wind wind = new Wind();
        wind.setDeg(windJson.getString("deg"));
        wind.setSpeed(windJson.getString("speed"));
        return wind;
    }
}

```

```

    } else {
        return null;
    }
}

public static Clouds getCloudsObjectFromJson(String json) throws JSONException {
    JSONObject jsonObject = new JSONObject(json);
    JSONObject cloudsJson = jsonObject.getJSONObject("clouds");
    if(cloudsJson != null) {
        Clouds clouds = new Clouds();
        clouds.setAll(cloudsJson.getString("all"));
        return clouds;
    } else {
        return null;
    }
}
}

```

Main.java:

```

public class Main {
    private String humidity;

    private String pressure;

    private String temp_max;

    private String temp_min;

    private String temp;

    public String getHumidity () {
        return humidity;
    }

    public void setHumidity (String humidity) {
        this.humidity = humidity;
    }

    public String getPressure () {
        return pressure;
    }
}

```

```

public void setPressure (String pressure) {
    this.pressure = pressure;
}

public String getTemp_max () {
    return temp_max;
}

public void setTemp_max (String temp_max) {
    this.temp_max = temp_max;
}

public String getTemp_min () {
    return temp_min;
}

public void setTemp_min (String temp_min) {
    this.temp_min = temp_min;
}

public String getTemp () {
    return temp;
}

public void setTemp (String temp) {
    this.temp = temp;
}

@Override
public String toString() {
    return "Main [humidity = "+humidity+", pressure = "+pressure+", temp_max =
"+temp_max+", temp_min = "+temp_min+", temp = "+temp+"]";
}
}

```

Rain.java:

```

public class Rain {

}

```

Sys.java:

```
public class Sys {  
    private String message;  
  
    private String id;  
  
    private String sunset;  
  
    private String sunrise;  
  
    private String type;  
  
    private String country;  
  
    public String getMessage () {  
        return message;  
    }  
  
    public void setMessage (String message) {  
        this.message = message;  
    }  
  
    public String getId () {  
        return id;  
    }  
  
    public void setId (String id) {  
        this.id = id;  
    }  
  
    public String getSunset () {  
        return sunset;  
    }  
  
    public void setSunset (String sunset) {  
        this.sunset = sunset;  
    }  
  
    public String getSunrise () {  
        return sunrise;  
    }  
  
    public void setSunrise (String sunrise) {
```

```

        this.sunrise = sunrise;
    }

    public String getType () {
        return type;
    }

    public void setType (String type) {
        this.type = type;
    }

    public String getCountry () {
        return country;
    }

    public void setCountry (String country) {
        this.country = country;
    }

    @Override
    public String toString() {
        return "Sys [message =" +message+", id =" +id+, sunset =" +sunset+, sunrise
= "+sunrise+, type =" +type+, country =" +country+"]";
    }
}

```

Weather.java:

```

public class Weather {
    private String id;

    private String icon;

    private String description;

    private String main;

    public String getId () {
        return id;
    }

    public void setId (String id) {

```

```

    this.id = id;
}

public String getIcon () {
    return icon;
}

public void setIcon (String icon) {
    this.icon = icon;
}

public String getDescription () {
    return description;
}

public void setDescription (String description) {
    this.description = description;
}

public String getMain () {
    return main;
}

public void setMain (String main) {
    this.main = main;
}

@Override
public String toString() {
    return "Weather [id = "+id+", icon = "+icon+", description = "+description+",
main = "+main+"]";
}
}

```

WeatherData.java:

```
import java.util.Arrays;
```

```

public class WeatherData {
    private String id;

    private String dt;

```

```

private Clouds clouds;

private Coord coord;

private Wind wind;

private String cod;

private String visibility;

private Sys sys;

private String name;

private String base;

private Weather[] weather;

//private Rain rain;

private Main main;

public String getId () {
    return id;
}

public void setId (String id) {
    this.id = id;
}

public String getDt () {
    return dt;
}

public void setDt (String dt) {
    this.dt = dt;
}

public Clouds getClouds () {
    return clouds;
}

public void setClouds (Clouds clouds) {

```

```

    this.clouds = clouds;
}

public Coord getCoord () {
    return coord;
}

public void setCoord (Coord coord) {
    this.coord = coord;
}

public Wind getWind () {
    return wind;
}

public void setWind (Wind wind) {
    this.wind = wind;
}

public String getCod () {
    return cod;
}

public void setCod (String cod) {
    this.cod = cod;
}

public String getVisibility () {
    return visibility;
}

public void setVisibility (String visibility) {
    this.visibility = visibility;
}

public Sys getSys () {
    return sys;
}

public void setSys (Sys sys) {
    this.sys = sys;
}

public String getName () {

```

```

    return name;
}

public void setName (String name) {
    this.name = name;
}

public String getBase () {
    return base;
}

public void setBase (String base) {
    this.base = base;
}

public Weather[] getWeather () {
    return weather;
}

public void setWeather (Weather[] weather) {
    this.weather = weather;
}

/*public Rain getRain () {
    return rain;
}

public void setRain (Rain rain) {
    this.rain = rain;
} */

public Main getMain () {
    return main;
}

public void setMain (Main main) {
    this.main = main;
}

@Override
public String toString() {
    return "WeatherData [id = "+id+", dt = "+dt+", clouds = "+clouds+", coord =
"+coord+", wind = "+wind+", cod = "+cod+", visibility = "+visibility+", sys = "+sys+",
name = "+name+", base = "+base+", weather = "+ Arrays.toString(weather) +", main =

```

```
" + main + "]" ;  
}  
}
```

WeatherDataBuilder.java:

```
import android.util.Log;  
  
import org.json.JSONException;  
import org.json.JSONObject;  
  
public class WeatherDataBuilder {  
    private static final String LOG_TAG = "WeatherDownloader";  
    public static WeatherData buildWeatherData(String response) {  
        JSONObject jsonObject;  
        try {  
            jsonObject = new JSONObject(response);  
        } catch (JSONException e) {  
            Log.e(LOG_TAG, e.getMessage());  
            return null;  
        }  
  
        WeatherData weatherData = new WeatherData();  
  
        Clouds cloudsData = null;  
        try {  
            cloudsData = JsonUtil.getCloudsObjectFromJson(response);  
            weatherData.setClouds(cloudsData);  
        } catch (JSONException e) {  
            Log.e(LOG_TAG, e.getMessage());  
            weatherData.setClouds(cloudsData);  
        }  
  
        Coord coordData = null;  
        try {  
            coordData = JsonUtil.getCoordObjectFromJson(response);  
            weatherData.setCoord(coordData);  
        } catch (JSONException e) {  
            Log.e(LOG_TAG, e.getMessage());  
            weatherData.setCoord(coordData);  
        }  
    }  
}
```

```

Main mainData = null;
try {
    mainData = JsonUtil.getMainObjectFromJson(response);
    weatherData.setMain(mainData);
} catch (JSONException e) {
    Log.e(LOG_TAG, e.getMessage());
    weatherData.setMain(mainData);
}

Sys sysData = null;
try {
    sysData = JsonUtil.getSysObjectFromJson(response);
    weatherData.setSys(sysData);
} catch (JSONException e) {
    weatherData.setSys(sysData);
    Log.e(LOG_TAG, e.getMessage());
}

Weather[] weatherObjectData = null;
try {
    weatherObjectData = JsonUtil.getWeatherObjectFromJson(response);
    weatherData.setWeather(weatherObjectData);
} catch (JSONException e) {
    weatherData.setWeather(weatherObjectData);
    Log.e(LOG_TAG, e.getMessage());
}

Wind windData = null;
try {
    windData = JsonUtil.getWindObjectFromJson(response);
    weatherData.setWind(windData);
} catch (JSONException e) {
    weatherData.setWind(windData);
    Log.e(LOG_TAG, e.getMessage());
}

try {
    weatherData.setBase(jsonObject.getString("base"));
} catch (JSONException e) {
    Log.e(LOG_TAG, e.getMessage());
}

```

```

        weatherData.setBase(null);
    }
    try {
        weatherData.setVisibility(jsonObject.getString("visibility"));
    } catch (JSONException e) {
        Log.e(LOG_TAG, e.getMessage());
        weatherData.setVisibility(null);
    }
    try {
        weatherData.setDt(jsonObject.getString("dt"));
    } catch (JSONException e) {
        Log.e(LOG_TAG, e.getMessage());
        weatherData.setDt(null);
    }
    try {
        weatherData.setId(jsonObject.getString("id"));
    } catch (JSONException e) {
        Log.e(LOG_TAG, e.getMessage());
        weatherData.setId(null);
    }
    try {
        weatherData.setName(jsonObject.getString("name"));
    } catch (JSONException e) {
        Log.e(LOG_TAG, e.getMessage());
        weatherData.setName(null);
    }
    try {
        weatherData.setCod(jsonObject.getString("cod"));
    } catch (JSONException e) {
        Log.e(LOG_TAG, e.getMessage());
        weatherData.setCod(null);
    }

    return weatherData;
}
}

```

WeatherDownloader.java:

```

import android.net.Uri;
import android.os.AsyncTask;
import android.util.Log;

```

```

import java.io.BufferedInputStream;
import java.io.BufferedReader;
import java.io.IOException;
import java.io.InputStream;
import java.io.InputStreamReader;
import java.net.HttpURLConnection;
import java.net.URL;

public class WeatherDownloader {
    public static final String LOG_TAG = "WeatherDownloader";
    private WeatherDataDownloadListener downloadListener;
    private Mode mode;

    private final String BASE_URL = "api.openweathermap.org";
    private final String DATA_PATH = "data";
    private final String VERSION_PATH = "2.5";
    private final String WEATHER_PATH = "weather";

    public WeatherDownloader(WeatherDataDownloadListener downloadListener, Mode mode)
    {
        this.downloadListener = downloadListener;
        this.mode = mode;
    }

    public void getCurrentWeatherData(String apiKey, String query) {
        if(apiKey != null) {
            try {
                String url = buildUrl(apiKey, mode, query);
                new DownloadCurrentData().execute(url);
            } catch (Exception e) {
                Log.e(LOG_TAG, e.getMessage());
            }
        } else {
            Log.e(LOG_TAG, "ApiKey cannot be null");
        }
    }

    private String buildUrl(String apiKey, Mode mode, String query) {
        Uri.Builder builder = new Uri.Builder();
        builder.scheme("http")
            .authority(BASE_URL)

```

```

.appendPath(DATA_PATH)
.appendPath(VERSION_PATH)
.appendPath(WEATHER_PATH)
.appendQueryParameter("appid", apiKey);

switch (mode) {
    case CITYNAME:
        builder.appendQueryParameter("q", query);
        return builder.build().toString();
    case ZIPCODE:
        builder.appendQueryParameter("zip", query);
        return builder.build().toString();
    case COORDINATES:
        String[] coord = query.split(":");
        builder.appendQueryParameter("lat", coord[0]);
        builder.appendQueryParameter("lon", coord[1]);
        return builder.build().toString();
    case CITYID:
        builder.appendQueryParameter("id", query);
        return builder.build().toString();
    default:
        break;
}
return null;
}

public interface WeatherDataDownloadListener {
    void onWeatherDownloadComplete(WeatherData data, Mode mode);
    void onWeatherDownloadFailed(Exception e);
}

private class DownloadCurrentData extends AsyncTask<String, Void, String> {
    @Override
    protected String doInBackground(String... params) {
        InputStream inputStream = null;
        URL url;
        HttpURLConnection httpURLConnection = null;
        try {
            url = new URL(params[0]);
            httpURLConnection = (HttpURLConnection) url.openConnection();
            httpURLConnection.setConnectTimeout(15000); //15 sec
            inputStream = new
                BufferedInputStream(httpURLConnection.getInputStream());
            return convertInputStreamToString(inputStream);
        }

```

```

        } catch (IOException e) {
            Log.e(LOG_TAG, e.getMessage());
        } finally {
            try {
                if (inputStream != null) {
                    inputStream.close();
                }
                if (httpURLConnection != null) {
                    httpURLConnection.disconnect();
                }
            } catch (IOException e) {
                Log.e(LOG_TAG, e.getMessage());
            }
        }
        return null;
    }

    @Override
    protected void onPostExecute(String response) {
        if(response == null) {
            Log.e(LOG_TAG, "Response is null");
            downloadListener.onWeatherDownloadComplete(null, mode);
        } else {
            try {

downloadListener.onWeatherDownloadComplete(WeatherDataBuilder.buildWeatherData(respons
e), mode);
        } catch (Exception e) {
            Log.e(LOG_TAG, "Invalid data");
            downloadListener.onWeatherDownloadFailed(e);
        }
    }
}

private String convertInputStreamToString(InputStream inputStream) throws
IOException{
    BufferedReader bufferedReader = new BufferedReader(new
InputStreamReader(inputStream));
    String line;
    String result = "";
    while((line = bufferedReader.readLine()) != null) {
        result += line;
    }
    inputStream.close();
}

```

```

        return result;
    }
}

public enum Mode {
    ZIPCODE,
    COORDINATES,
    CITYID,
    CITYNAME
}
}

```

WeatherUnits.java:

```

public class WeatherUnits {
    public static Double convertToCelsius(String kelvin) throws NumberFormatException{
        double inKelvin;
        try {
            inKelvin = Double.parseDouble(kelvin);
        } catch (NumberFormatException e) {
            throw e;
        }
        return inKelvin - 273.15;
    }
    public static Double convertToFahrenheit(String kelvin) throws
NumberFormatException{
        double inKelvin;
        try {
            inKelvin = Double.parseDouble(kelvin);
        } catch (NumberFormatException e) {
            throw e;
        }
        return (inKelvin - 273.15)* 1.8000 + 32.00;
    }
}

```

Wind.java:

```

public class Wind {
    private String speed;
}

```

```

private String deg;

public String getSpeed () {
    return speed;
}

public void setSpeed (String speed) {
    this.speed = speed;
}

public String getDeg () {
    return deg;
}

public void setDeg (String deg) {
    this.deg = deg;
}

@Override
public String toString() {
    return "Wind [speed = "+speed+", deg = "+deg+"]";
}
}

```

activity_main.xml:

```

<?xml version="1.0" encoding="UTF-8"?>

<LinearLayout tools:context=".MainActivity"
    android:orientation="vertical"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:layout_height="match_parent"
    android:layout_width="match_parent"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <LinearLayout android:orientation="horizontal"
    android:layout_height="wrap_content"
    android:layout_width="match_parent">

```

```

<TextView android:layout_height="wrap_content"
    android:layout_width="0dp"
    android:text="Search by name"
    android:layout_weight="1"/>

<EditText android:layout_height="wrap_content"
    android:layout_width="0dp"
    android:layout_weight="1"
    android:inputType="textAutoCorrect"
    android:hint="city name"
    android:id="@+id/city_name"/>

</LinearLayout>

<LinearLayout android:orientation="horizontal"
    android:layout_height="wrap_content"
    android:layout_width="match_parent">

    <TextView android:layout_height="wrap_content"
        android:layout_width="0dp"
        android:layout_weight="1"
        android:id="@+id/city_result"/>

    <ProgressBar android:layout_height="wrap_content"
        android:layout_width="wrap_content"
        android:id="@+id/city_progress"
        android:indeterminate="true"
        android:visibility="gone"/>

    <Button android:layout_height="wrap_content"
        android:layout_width="wrap_content"
        android:text="Get Current Weather"
        android:id="@+id/city_search"/>

</LinearLayout>

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textAppearance="?android:attr/textAppearanceSmall"
    android:text="Celsius" />

```

```

<LinearLayout android:orientation="horizontal"
    android:layout_height="wrap_content"
    android:layout_width="match_parent">

    <TextView android:layout_height="wrap_content"
        android:layout_width="0dp"
        android:text="Search by zip code"
        android:layout_weight="1"/>

    <EditText android:layout_height="wrap_content"
        android:layout_width="0dp"
        android:layout_weight="1"
        android:inputType="number"
        android:hint="zip code"
        android:id="@+id/zip_code"/>

</LinearLayout>

<LinearLayout
    android:orientation="horizontal"
    android:layout_height="wrap_content"
    android:layout_width="match_parent">

    <TextView android:layout_height="wrap_content"
        android:layout_width="0dp"

        android:layout_weight="1"
        android:id="@+id/zip_code_result"/>

    <ProgressBar android:layout_height="wrap_content"
    android:layout_width="wrap_content"
        android:id="@+id/zip_code_progress"
        android:indeterminate="true"
        android:visibility="gone"/>

    <Button android:layout_height="wrap_content"
        android:layout_width="wrap_content"
        android:text="Get Current Weather"
        android:id="@+id/zip_code_search"
        android:layout_gravity="end"/>

</LinearLayout>

```

```
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textAppearance="?android:attr/textAppearanceSmall"
    android:text="Fahrenheit" />

<LinearLayout android:orientation="horizontal"
    android:layout_height="wrap_content"
    android:layout_width="match_parent">

    <TextView android:layout_height="wrap_content"
        android:layout_width="0dp"
        android:text="Search by coordinates"
        android:layout_weight="1"/>

    <EditText android:layout_height="wrap_content"
        android:layout_width="0dp"
        android:layout_weight="1"
        android:inputType="text"
        android:hint="lat:lon"
        android:id="@+id/coordinates"/>

</LinearLayout>

<LinearLayout android:orientation="horizontal"
    android:layout_height="wrap_content"
    android:layout_width="match_parent">

    <TextView android:layout_height="wrap_content"
        android:layout_width="0dp"
        android:layout_weight="1"
        android:id="@+id/coordinates_result"/>

    <ProgressBar android:layout_height="wrap_content"
    android:layout_width="wrap_content"
        android:id="@+id/coordinates_progress"
        android:indeterminate="true"
        android:visibility="gone"/>

    <Button android:layout_height="wrap_content"
        android:layout_width="wrap_content"
```

```

        android:text="Get Current Weather"
        android:id="@+id/coordinates_search"
        android:layout_gravity="end"/>

    </LinearLayout>

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textAppearance="?android:attr/textAppearanceSmall"
        android:text="Kelvin" />

    <LinearLayout android:orientation="horizontal"
    android:layout_height="wrap_content"
    android:layout_width="match_parent">

        <TextView android:layout_height="wrap_content"
            android:layout_width="0dp"
            android:text="Search by City ID"
            android:layout_weight="1"/>

        <EditText android:layout_height="wrap_content"
            android:layout_width="0dp"
            android:layout_weight="1"
            android:inputType="text"
            android:hint="city id"
            android:id="@+id/city_id"/>

    </LinearLayout>

    <LinearLayout android:orientation="horizontal"
    android:layout_height="wrap_content"
    android:layout_width="match_parent">

        <TextView android:layout_height="wrap_content"
            android:layout_width="0dp"
            android:layout_weight="1"
            android:id="@+id/city_id_result"/>

        <ProgressBar android:layout_height="wrap_content"
        android:layout_width="wrap_content"
        android:id="@+id/city_id_progress"
        android:indeterminate="true"

```

```

        android:visibility="gone" />

        <Button android:layout_height="wrap_content"
            android:layout_width="wrap_content"
            android:text="Get Current Weather"
            android:id="@+id/city_id_search"
            android:layout_gravity="end" />

    </LinearLayout>

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textAppearance="?android:attr/textAppearanceSmall"
        android:text="Fahrenheit" />

</LinearLayout>

```

Create a resource file in values i.e., create **key.xml** and add the following code:

```

<?xml version="1.0" encoding="utf-8" ?>
<resources>

<string name="weather_api_key">16f28aecfde1858cd9bda7e9444e54e8</string>

</resources>

```

In manifest file, you need to add the following permission code:

```
<uses-permission android:name="android.permission.INTERNET" />
```

- **How to create a compass application**

Main activity.java:

```

import android.content.Context;
import android.hardware.GeomagneticField;
import android.hardware.Sensor;
import android.hardware.SensorEvent;

```

```

import android.hardware.SensorEventListener;
import android.hardware.SensorManager;
import android.location.Location;
import android.location.LocationManager;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.view.WindowManager;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity implements SensorEventListener {

    public static final String NA = "N/A";
    public static final String FIXED = "FIXED";
    // location min time
    private static final int LOCATION_MIN_TIME = 30 * 1000;
    // location min distance
    private static final int LOCATION_MIN_DISTANCE = 10;
    // Gravity for accelerometer data
    private float[] gravity = new float[3];
    // magnetic data
    private float[] geomagnetic = new float[3];
    // Rotation data
    private float[] rotation = new float[9];
    // orientation (azimuth, pitch, roll)
    private float[] orientation = new float[3];
    // smoothed values
    private float[] smoothed = new float[3];
    // sensor manager
    private SensorManager sensorManager;
    // sensor gravity
    private Sensor sensorGravity;
    private Sensor sensorMagnetic;
    private LocationManager locationManager;
    private Location currentLocation;
    private GeomagneticField geomagneticField;
    private double bearing = 0;
    private TextView textDirection, textLat, textLong;
    private CompassView compassView;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        textDirection = (TextView) findViewById(R.id.text);
    }
}

```

```

    compassView = (CompassView) findViewById(R.id.compass);
    // keep screen light on (wake lock light)
    getWindow().addFlags(WindowManager.LayoutParams.FLAG_KEEP_SCREEN_ON);
}

@Override
protected void onStart() {
    super.onStart();
    sensorManager = (SensorManager) getSystemService(Context.SENSOR_SERVICE);
    sensorGravity = sensorManager.getDefaultSensor(Sensor.TYPE_ACCELEROMETER);
    sensorMagnetic = sensorManager.getDefaultSensor(Sensor.TYPE_MAGNETIC_FIELD);

    // listen to these sensors
    sensorManager.registerListener(this, sensorGravity,
        SensorManager.SENSOR_DELAY_NORMAL);
    sensorManager.registerListener(this, sensorMagnetic,
        SensorManager.SENSOR_DELAY_NORMAL);
}

@Override
public void onSensorChanged(SensorEvent event) {
    boolean accelOrMagnetic = false;

    // get accelerometer data
    if (event.sensor.getType() == Sensor.TYPE_ACCELEROMETER) {
        // we need to use a low pass filter to make data smoothed
        smoothed = LowPassFilter.filter(event.values, gravity);
        gravity[0] = smoothed[0];
        gravity[1] = smoothed[1];
        gravity[2] = smoothed[2];
        accelOrMagnetic = true;
    }

    } else if (event.sensor.getType() == Sensor.TYPE_MAGNETIC_FIELD) {
        smoothed = LowPassFilter.filter(event.values, geomagnetic);
        geomagnetic[0] = smoothed[0];
        geomagnetic[1] = smoothed[1];
        geomagnetic[2] = smoothed[2];
        accelOrMagnetic = true;
    }

    }
}

// get rotation matrix to get gravity and magnetic data

```

```

SensorManager.getRotationMatrix(rotation, null, gravity, geomagnetic);
// get bearing to target
SensorManager.getOrientation(rotation, orientation);
// east degrees of true North
bearing = orientation[0];
// convert from radians to degrees
bearing = Math.toDegrees(bearing);

// fix difference between true North and magnetical North
if (geomagneticField != null) {
    bearing += geomagneticField.getDeclination();
}

// bearing must be in 0-360
if (bearing < 0) {
    bearing += 360;
}

// update compass view
compassView.setBearing((float) bearing);

if (accelOrMagnetic) {
    compassView.postInvalidate();
}

updateTextDirection(bearing); // display text direction on screen
}

private void updateTextDirection(double bearing) {
    int range = (int) (bearing / (360f / 16f));
    String dirTxt = "";

    if (range == 15 || range == 0)
        dirTxt = "N";
    if (range == 1 || range == 2)
        dirTxt = "NE";
    if (range == 3 || range == 4)
        dirTxt = "E";
    if (range == 5 || range == 6)
        dirTxt = "SE";
    if (range == 7 || range == 8)
        dirTxt = "S";
    if (range == 9 || range == 10)
        dirTxt = "SW";
}

```

```

    if (range == 11 || range == 12)
        dirTxt = "W";
    if (range == 13 || range == 14)
        dirTxt = "NW";

    textDirection.setText("'" + ((int) bearing) + ((char) 176) + " "
        + dirTxt); // char 176 ) = degrees ...
}

@Override
public void onAccuracyChanged(Sensor sensor, int accuracy) {
    if (sensor.getType() == Sensor.TYPE_MAGNETIC_FIELD
        && accuracy == SensorManager.SENSOR_STATUS_UNRELIABLE) {
        // manage fact that compass data are unreliable ...
        // toast ? display on screen ?
    }
}
}
}

```

CompassView.java:

```

import android.content.Context;
import android.graphics.Bitmap;
import android.graphics.BitmapFactory;
import android.graphics.Canvas;
import android.graphics.Matrix;
import android.graphics.Paint;
import android.util.AttributeSet;
import android.view.View;

public class CompassView extends View {

    private static final Paint paint = new Paint(Paint.ANTI_ALIAS_FLAG);
    private int width = 0;
    private int height = 0;
    private Matrix matrix; // to manage rotation of the compass view
    private Bitmap bitmap;
    private float bearing; // rotation angle to North

    public CompassView(Context context) {
        super(context);
        initialize();
    }
}

```

```

public CompassView(Context context, AttributeSet attr) {
    super(context, attr);
    initialize();
}

private void initialize() {
    matrix = new Matrix();
    // create bitmap for compass icon
    bitmap = BitmapFactory.decodeResource(getResources(),
        R.drawable.compass_icon);
}

public void setBearing(float b) {
    bearing = b;
}

@Override
protected void onMeasure(int widthMeasureSpec, int heightMeasureSpec) {
    super.onMeasure(widthMeasureSpec, heightMeasureSpec);
    width = MeasureSpec.getSize(widthMeasureSpec);
    height = MeasureSpec.getSize(heightMeasureSpec);
    setMeasuredDimension(width, height);
}

@Override
protected void onDraw(Canvas canvas) {
    int bitmapWidth = bitmap.getWidth();
    int bitmapHeight = bitmap.getHeight();
    int canvasWidth = canvas.getWidth();
    int canvasHeight = canvas.getHeight();

    if (bitmapWidth > canvasWidth || bitmapHeight > canvasHeight) {
        // resize bitmap to fit in canvas
        bitmap = Bitmap.createScaledBitmap(bitmap,
            (int) (bitmapWidth * 0.85), (int) (bitmapHeight * 0.85), true);
    }

    // center
    int bitmapX = bitmap.getWidth() / 2;
    int bitmapY = bitmap.getHeight() / 2;
    int parentX = width / 2;
    int parentY = height / 2;
    int centerX = parentX - bitmapX;
}

```

```

    int centerY = parentY - bitmapY;

    // calculate rotation angle
    int rotation = (int) (360 - bearing);

    // reset matrix
    matrix.reset();
    matrix.setRotate(rotation, bitmapX, bitmapY);
    // center bitmap on canvas
    matrix.postTranslate(centerX, centerY);
    // draw bitmap
    canvas.drawBitmap(bitmap, matrix, paint);
}

}

```

LowPassFilter.java:

```

public class LowPassFilter {
    private static final float ALPHA = 0.2f;
    private LowPassFilter() {
    }

    public static float[] filter(float[] input, float[] output) {
        if (output==null)
            return input;
        for(int i=0; i<input.length; i++) {
            output[i] = output[i] + ALPHA + (input[i]-output[i]);
        }
        return output;
    }
}

```

activity_main.xml:

```

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"

```

```

    android:layout_height="match_parent"
    android:background="@drawable/background"
    android:orientation="vertical"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="manju.example.com.myapplicationcompass.MainActivity" >

    <RelativeLayout
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="15dp" >

        <TextView
            android:id="@+id/text"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_centerInParent="true"
            android:textSize="@dimen/dirSize" />

    </RelativeLayout>

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center_horizontal"
        android:layout_marginTop="10dp"
        android:orientation="horizontal" >

    </LinearLayout>

    <RelativeLayout
        android:layout_width="fill_parent"
        android:layout_height="fill_parent" >

        <manju.example.com.myapplicationcompass.CompassView
            android:id="@+id/compass"
            android:layout_width="fill_parent"
            android:layout_height="fill_parent"
            android:layout_centerInParent="true" />

    </RelativeLayout>

</LinearLayout>

```

In manifest file – the following permissions should be added

```
<uses-feature  
    android:name ="android.hardware.sensor.accelerometer"  
    android:required ="true"/>  
  
<uses-feature  
    android:name ="android.hardware.sensor.compass"  
    android:required ="true"/>
```

dimens.xml (in values folder):

```
<dimen name="dirSize">32dp</dimen>
```

- Download (via internet) on button click

Code in MainActivity.java:

```
import android.app.DownloadManager;  
import android.app.DownloadManager.Query;  
import android.app.DownloadManager.Request;  
import android.content.BroadcastReceiver;  
import android.content.Context;  
import android.content.Intent;  
import android.content.IntentFilter;  
import android.database.Cursor;  
import android.net.Uri;  
import android.os.Bundle;  
import android.support.v7.app.AppCompatActivity;  
import android.view.View;  
  
public class MainActivity extends AppCompatActivity {  
  
    private long enqueue;  
    private DownloadManager dm;  
  
    /** Called when the activity is first created. */  
    @Override  
    public void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);
```

```

BroadcastReceiver receiver = new BroadcastReceiver() {
    @Override
    public void onReceive(Context context, Intent intent) {
        String action = intent.getAction();
        if (DownloadManager.ACTION_DOWNLOAD_COMPLETE.equals(action)) {
            long downloadId = intent.getLongExtra(
                DownloadManager.EXTRA_DOWNLOAD_ID, 0);
            Query query = new Query();
            query.setFilterById(enqueue);
            Cursor c = dm.query(query);
            if (c.moveToFirst()) {
                int columnIndex = c
                    .getColumnIndex(DownloadManager.COLUMN_STATUS);
                ...
            }
        }
    }
};

registerReceiver(receiver, new IntentFilter(
    DownloadManager.ACTION_DOWNLOAD_COMPLETE));
}

public void onClick(View view) {
    dm = (DownloadManager) getSystemService(DOWNLOAD_SERVICE);
    Request request = new Request(
        Uri.parse("http://programmerringuru.com/android-tutorial/wp-
content/uploads/2014/01/jai_ho.mp3"));
    enqueue = dm.enqueue(request);
}

public void showDownload(View view) {
    Intent i = new Intent();
    i.setAction(DownloadManager.ACTION_VIEW_DOWNLOADS);
    startActivity(i);
}
}

```

In manifest file – you need to add the following permission:

```
<uses-permission android:name="android.permission.INTERNET"/>
```

activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical" android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:weightSum="1">
    <Button android:text="Start Download" android:id="@+id/button1"
        android:layout_width="wrap_content" android:layout_height="wrap_content"
        android:onClick="onClick"
        android:layout_gravity="center_horizontal"></Button>
    <Button android:text="View Downloads" android:id="@+id/button2"
        android:layout_width="wrap_content" android:layout_height="wrap_content"
        android:onClick="showDownload"
        android:layout_gravity="center_horizontal"></Button>
    <ImageView android:layout_height="195dp"
        android:src="@mipmap/ic_launcher"
        android:layout_width="match_parent"></ImageView>

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Next"
        android:id="@+id/button"
        android:layout_gravity="center_horizontal" />
</LinearLayout>
```

- Tap to share something you wish

MainActivity.java:

```
import android.content.Intent;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.view.Menu;
import android.view.View;
import android.widget.ImageView;
```

```

public class MainActivity extends AppCompatActivity {
    private ImageView img;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        img = (ImageView) findViewById(R.id.imageView1);
    }
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the action bar if it is present.
        getMenuInflater().inflate(R.menu.menu_main, menu);
        return true;
    }
    public void open(View view) {
        Intent shareIntent = new Intent();
        shareIntent.setAction(Intent.ACTION_SEND);
        shareIntent.setType("text/plain");
        shareIntent.putExtra(Intent.EXTRA_TEXT, "Hello, How r u ");
        startActivity(Intent.createChooser(shareIntent, "Share your thoughts"));
    }
}

```

activity_main.xml:

```

<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context=".MainActivity" >
    <ImageView
        android:id="@+id/imageView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentLeft="true"
        android:layout_alignParentTop="true"
        android:layout_marginLeft="98dp"
        android:layout_marginTop="139dp"
        android:onClick="open"
        android:src="@drawable/ic_launcher" />

```

```

<TextView
    android:id="@+id/textView1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentTop="true"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="48dp"
    android:text="@string/tap"
    android:textAppearance="?android:attr/textAppearanceLarge" />
</RelativeLayout>

```

String.xml:

```

<resources>
    <string name="hello_world">Hello world!</string>
    <string name="tap">Tap the button to share something</string>
</resources>

```

In manifest file – you need to add the following permission:

```
<uses-permission android:name="android.permission.INTERNET"/>
```

- Start, stop and play the Audio

Main Activity.java:

```

import android.content.Intent;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.view.Menu;
import android.view.View;
import java.io.File;
import java.io.IOException;
import android.media.MediaPlayer;
import android.media.MediaRecorder;
import android.os.Bundle;

```

```

import android.os.Environment;
import android.app.Activity;
import android.view.Menu;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    private MediaRecorder myAudioRecorder;
    private String outputFile = null;
    private Button start,stop,play;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        start = (Button)findViewById(R.id.button1);
        stop = (Button)findViewById(R.id.button2);
        play = (Button)findViewById(R.id.button3);
        stop.setEnabled(false);
        play.setEnabled(false);
        outputFile = Environment.getExternalStorageDirectory() .
            getAbsolutePath() + "/myrecording.3gp";;
        myAudioRecorder = new MediaRecorder();
        myAudioRecorder.setAudioSource(MediaRecorder.AudioSource.MIC);
        myAudioRecorder.setOutputFormat(MediaRecorder.OutputFormat.THREE_GPP);
        myAudioRecorder.setAudioEncoder(MediaRecorder.OutputFormat.AMR_NB);
        myAudioRecorder.setOutputFile(outputFile);
    }
    public void start(View view){
        try {
            myAudioRecorder.prepare();
            myAudioRecorder.start();
        } catch (IllegalStateException e) {
            // TODO Auto-generated catch block
            e.printStackTrace();
        } catch (IOException e) {
            // TODO Auto-generated catch block
            e.printStackTrace();
        }
        start.setEnabled(false);
        stop.setEnabled(true);
        Toast.makeText(getApplicationContext(),
            "Recording started", Toast.LENGTH_LONG).show();
    }
}

```

```

public void stop(View view) {
    myAudioRecorder.stop();
    myAudioRecorder.release();
    myAudioRecorder = null;
    stop.setEnabled(false);
    play.setEnabled(true);
    Toast.makeText(getApplicationContext(),
        "Audio recorded successfully",
        Toast.LENGTH_LONG).show();      }

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    // Inflate the menu; this adds items to the action bar if it is present.
    getMenuInflater().inflate(R.menu.menu_main, menu);
    return true;      }

public void play(View view) throws IllegalArgumentException,
    SecurityException, IllegalStateException, IOException{
    MediaPlayer m = new MediaPlayer();
    m.setDataSource(outputFile);
    m.prepare();
    m.start();
    Toast.makeText(getApplicationContext(), "Playing audio",
    Toast.LENGTH_LONG).show();
}

}

```

activity_main.xml:

```

<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context=".MainActivity" >

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentLeft="true"

```

```

        android:layout_alignParentRight="true"
        android:layout_alignParentTop="true"
        android:layout_marginTop="32dp"
        android:text="@string/Recording"
        android:textAppearance="?android:attr/textAppearanceMedium" />

<ImageView
    android:id="@+id/imageView1"
    android:layout_width="100dp"
    android:layout_height="100dp"
    android:layout_below="@+id/textView1"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="37dp"
    android:scaleType="fitXY"
    android:src="@android:drawable/presence_audio_online" />
<Button
    android:id="@+id/button1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/imageView1"
    android:layout_marginTop="67dp"
    android:layout_toLeftOf="@+id/imageView1"
    android:onClick="start"
    android:text="@string/start" />
<Button
    android:id="@+id/button2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignBaseline="@+id/button1"
    android:layout_alignBottom="@+id/button1"
    android:layout_alignRight="@+id/textView1"
    android:layout_marginRight="40dp"
    android:onClick="stop"
    android:text="@string/stop" />
<Button
    android:id="@+id/button3"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/button2"
    android:layout_centerHorizontal="true"
    android:onClick="play"
    android:text="@string/play" />
</RelativeLayout>
```

Permissions in manifest file:

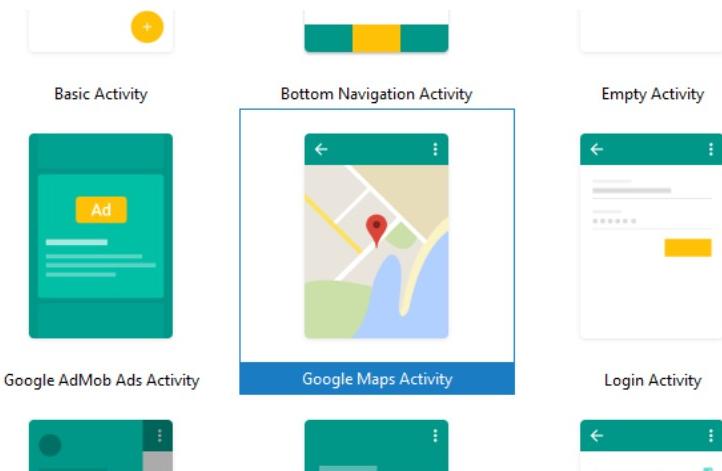
```
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
<uses-permission android:name="android.permission.RECORD_AUDIO" />
```

String.xml:

```
<resources>
    <string name="Recording">Android Audio Recording Application</string>
    <string name="start">start</string>
    <string name="stop">stop</string>
    <string name="play">play</string>
</resources>
```

- **Google Map**

First you need to update Google play services



After Gradle build, open **Google_maps_api.xml** in layout folder and note Finger print and package name i.e.,

Google_maps_api.xml

```
<!--
TODO: Before you run your application, you need a Google Maps API key.
```

To get one, follow this link, follow the directions and press "Create" at the end:

```
https://console.developers.google.com/flows/enableapi?apiId=maps_android_backend&keyType=CLIENT_SIDE_ANDROID&r=A0:4D:F6:41:65:95:F3:59:F7:E1:03:24:44:56:26:87:C8:ED:37:6C%3Bcom.example.manju.myapplication
```

You can also add your credentials to an existing key, using this line:

```
A0:4D:F6:41:65:95:F3:59:F7:E1:03:24:44:56:26:87:C8:ED:37:6C;com.example.manju.myapplication
```

Alternatively, follow the directions here:

```
https://developers.google.com/maps/documentation/android/start#get-key
```

Once you have your key (it starts with "AIza"), replace the "google_maps_key" string in this file.

-->

And after noting finger print (A0:4D:F6:41:65:95:F3:59:F7:E1:03:24:44:56:26:87:C8:ED:37:6C) and package name (*com.example.manju.myapplication*)— Go to Google Developer Console:

<https://code.google.com/apis/console/?pli=1>

Then go to CREATE PROJECT → New Project (enter project name) → create → Under API Manager → go to Credentials → APIs Credentials → API key → Android key → Add package name and finger print → fill package name and finger print → create → Note down your API key

After noting down the API key — you need to enter it in the Manifest.xml file as follows:

```
<meta-data  
    android:name="com.google.android.geo.API_KEY"  
    android:value="AIzaSyDWOTqYHHYlrziUPoF4IshFKNxKxlo91PM" />
```

And you need to add the following permissions to your manifest file:

```
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />  
<uses-permission android:name="android.permission.INTERNET" />
```

SCROLL VIEW

```
<ScrollView  
    xmlns:android="http://schemas.android.com/apk/res/android"  
    android:layout_width="fill_parent"  
    android:layout_height="wrap_content" >  
  
    <LinearLayout  
        android:layout_width="fill_parent"  
        android:layout_height="fill_parent"  
        android:orientation="vertical"      >  
  
        <Button  
            android:id="@+id/button1"  
            android:layout_width="wrap_content"  
            android:layout_height="wrap_content"  
            android:layout_marginTop="20dp"  
            android:layout_marginLeft="20dp"  
            android:text="Button 1"      />  
  
        <Button  
            android:id="@+id/button2"  
            android:layout_width="wrap_content"  
            android:layout_height="wrap_content"  
            android:layout_marginTop="20dp"  
            android:layout_marginLeft="20dp"  
            android:text="Button 2"  
        />
```

```
<Button  
    android:id="@+id/button3"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_marginTop="20dp"  
    android:layout_marginLeft="20dp"  
    android:text="Button 3"  
/>>
```

```
<Button  
    android:id="@+id/button4"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_marginTop="20dp"  
    android:layout_marginLeft="20dp"  
    android:text="Button 4"  
/>>
```

```
<Button  
    android:id="@+id/button5"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_marginTop="20dp"  
    android:layout_marginLeft="20dp"  
    android:text="Button 5"  
/>>
```

```
<Button  
    android:id="@+id/button6"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_marginTop="20dp"  
    android:layout_marginLeft="20dp"  
    android:text="Button 6"  
/>>
```

```
<Button  
    android:id="@+id/button7"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_marginTop="20dp"  
    android:layout_marginLeft="20dp"  
    android:text="Button 7"  
/>>
```

```
<Button  
    android:id="@+id/button8"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_marginTop="20dp"  
    android:layout_marginLeft="20dp"  
    android:text="Button 8"  
/>>
```

```

<Button

    android:id="@+id/button9"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:layout_marginTop="20dp"

    android:layout_marginLeft="20dp"

    android:text="Button 9"

/>

<Button

    android:id="@+id/button10"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:layout_marginTop="20dp"

    android:layout_marginLeft="20dp"

    android:text="Button 10"

/>

</LinearLayout>

</ScrollView>

```

- **WEB VIEW**

Code in MainActivity.java:

```

import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;

```

```

import android.webkit.WebSettings;
import android.webkit.WebView;

public class MainActivity extends AppCompatActivity {
    private WebView mWebView;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        mWebView = (WebView) findViewById(R.id.activity_main_webview);
        // Enable Javascript
        WebSettings webSettings = mWebView.getSettings();
        webSettings.setJavaScriptEnabled(true);
        mWebView.loadUrl("http://google.com/");
    }
}

```

activity_main.xml:

```

<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/container"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    tools:ignore="MergeRootFrame">

    <WebView
        android:id="@+id/activity_main_webview"
        android:layout_width="match_parent"
        android:layout_height="match_parent" />
</FrameLayout>

```

Permission you need to add to your manifest.xml file:

```
<uses-permission android:name="android.permission.INTERNET" />
```

- HOW TO CREATE A SIMPLE GAME

MainActivity.java:

```
import android.content.Intent;  
  
import android.os.Bundle;  
  
import android.support.v7.app.AppCompatActivity;  
  
import android.view.View;  
  
  
public class MainActivity extends AppCompatActivity {  
  
  
    protected void onCreate(Bundle savedInstanceState) {  
  
        super.onCreate(savedInstanceState);  
  
        setContentView(R.layout.activity_main);  
  
  
    }  
  
  
    public void play(View v)  
    {  
  
        Intent i=new Intent(this,Game.class);  
  
        startActivity(i);  
  
    }  
  
  
    public void highscore(View v)  
    {  
  
        Intent i=new Intent(this,Highscore.class);  
  
        startActivity(i);  
  
    }  
}
```

```

public void setting(View v)
{
    Intent i=new Intent(this,Setting.class);
    startActivity(i);
}

public void exit(View v)
{
    System.exit(0);
}
}

```

Game.java:

```

import android.annotation.SuppressLint;

import android.app.Activity;

import android.content.Context;

import android.content.SharedPreferences;

import android.content.SharedPreferences.Editor;

import android.graphics.Bitmap;

import android.graphics.BitmapFactory;

import android.graphics.Canvas;

import android.graphics.Color;

import android.graphics.Paint;

import android.graphics.Paint.Align;

import android.media.MediaPlayer;

import android.os.Bundle;

```

```

import android.telephony.PhoneStateListener;
import android.telephony.TelephonyManager;
import android.view.Display;
import android.view.MotionEvent;
import android.view.SurfaceHolder;
import android.view.SurfaceView;
import android.view.Window;
import android.view.WindowManager;

public class Game extends Activity {

    MediaPlayer mp1,jump,takecoin;
    gameloop gameLoopThread;

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        //phone state

        TelephonyManager TelephonyMgr = (TelephonyManager)
getSystemService(Context.TELEPHONY_SERVICE);

        TelephonyMgr.listen(new TeleListener(),PhoneStateListener.LISTEN_CALL_STATE);

        //for no title

        this.requestWindowFeature(Window.FEATURE_NO_TITLE);

        this.getWindow().setFlags(WindowManager.LayoutParams.FLAG_FULLSCREEN,
WindowManager.LayoutParams.FLAG_FULLSCREEN);

        setContentView(new GameView(this));

    }

    public class GameView extends SurfaceView{

        Bitmap bmp,pause;

```

```

Bitmap background,kinfe,note1,powerimg,note2;

Bitmap run1;

Bitmap run2;

Bitmap run3;

Bitmap coin;

Bitmap exit;

private SurfaceHolder holder;

private int x = 0,y=0,z=0,delay=0,getx,gety,sound=1;

int show=0,sx,sy;

int cspeed=0,kspeed=0,gameover=0;

int score=0,health=100,reset=0;

int pausecount=0,volume,power=0,powerrun=0,shieldrun=0;

@SuppressWarnings("deprecation")
@SuppressLint("NewApi")
public GameView(Context context)

{
    super(context);

    gameLoopThread = new gameloop(this);

    holder = getHolder();

    holder.addCallback(new SurfaceHolder.Callback() {

        @SuppressLint("deprecation")
        @Override

```

```

public void surfaceDestroyed(SurfaceHolder holder)
{
    //for stoping the game
    gameLoopThread.setRunning(false);

    gameLoopThread.getThreadGroup().interrupt();

}

@SuppressLint("WrongCall")

@Override

public void surfaceCreated(SurfaceHolder holder)
{
    gameLoopThread.setRunning(true);

    gameLoopThread.start();

}

@Override

public void surfaceChanged(SurfaceHolder holder, int format,int width,
int height)

{
}

}) ;

//getting the screen size

Display display = getWindowManager().getDefaultDisplay();

sx = display.getWidth();

sy = display.getHeight();;

```

```

cspeed=sx/2;

kspeed=sx/2;

powerrun=(3*sx/4);

shieldrun=sx/8;

background = BitmapFactory.decodeResource(getResources(), R.drawable.back);

run1=BitmapFactory.decodeResource(getResources(), R.drawable.run1);

run2=BitmapFactory.decodeResource(getResources(), R.drawable.run2);

run3=BitmapFactory.decodeResource(getResources(), R.drawable.run3);

coin=BitmapFactory.decodeResource(getResources(), R.drawable.coin);

exit=BitmapFactory.decodeResource(getResources(), R.drawable.exit);

kinfe=BitmapFactory.decodeResource(getResources(), R.drawable.kinfe);

note1=BitmapFactory.decodeResource(getResources(), R.drawable.note1);

pause=BitmapFactory.decodeResource(getResources(), R.drawable.pause);

powerimg=BitmapFactory.decodeResource(getResources(), R.drawable.power);

note2=BitmapFactory.decodeResource(getResources(), R.drawable.note2);

exit=Bitmap.createScaledBitmap(exit, 25,25, true);

pause=Bitmap.createScaledBitmap(pause, 25,25, true);

powerimg=Bitmap.createScaledBitmap(powerimg, 25,25, true);

note2=Bitmap.createScaledBitmap(note2, sx,sy, true);

run1=Bitmap.createScaledBitmap(run1, sx/9,sy/7, true);

run2=Bitmap.createScaledBitmap(run2, sx/9,sy/7, true);

run3=Bitmap.createScaledBitmap(run3, sx/9,sy/7, true);

coin=Bitmap.createScaledBitmap(coin, sx/16,sy/24, true);

background=Bitmap.createScaledBitmap(background, 2*sx,sy, true);

//health dec

```

```

note1=Bitmap.createScaledBitmap(note1, sx,sy, true);

mp1=MediaPlayer.create(Game.this,R.raw.game);

jump=MediaPlayer.create(Game.this,R.raw.jump);

takecoin=MediaPlayer.create(Game.this,R.raw.cointake);

}

// on touch method

@Override

public boolean onTouchEvent(MotionEvent event) {

    if(event.getAction()==MotionEvent.ACTION_DOWN)

    {

        show=1;

        getx=(int) event.getX();

        gety=(int) event.getY();

        //exit

        if(getx<25&&gety<25)

        {

            //high score

            SharedPreferences pref =

getApplicationContext().getSharedPreferences("higher", MODE_PRIVATE);

Editor editor = pref.edit();

editor.putInt("score", score);

editor.commit();

    }
}

```

```

        System.exit(0);

    }

    // restart game

    if(getx>91&&gety<25)

    {

        if(health<=0)

        {

            gameLoopThread.setPause(0);

            health=100;

            score=0;

        }

    }

    //pause game

    if((getx>(sx-25)&&gety<25&&pausecount==0))

    {

        gameLoopThread.setPause(1);

        mp1.stop();

        pausecount=1;

    }

    else if(getx>(sx-25)&&gety<25&&pausecount==1)

    {

        gameLoopThread.setPause(0);

        mp1.start();

        pausecount=0;

    }

```

```

        }

    }

    return true;
}

@Override

protected void onDraw(Canvas canvas)

{

//volume

SharedPreferences pref =
getApplicationContext().getSharedPreferences("higher", MODE_PRIVATE);

Editor editor = pref.edit();

volume=pref.getInt("vloume", 0);

if(volume==0)

{



sound=0;

}

canvas.drawColor(Color.BLACK);

//background moving

z=z-10;

if(z==sx)

```

```

{

    z=0;

    canvas.drawBitmap(background, z, 0, null);

}

else

{

    canvas.drawBitmap(background, z, 0, null);

}

//running player

x+=5;

if(x==20)

{

    x=5;

}

if(show==0)

{

    if(x%2==0)

    {

        canvas.drawBitmap(run3, sx/16, 15*sy/18, null);

    }

}

else

{

```

```

        canvas.drawBitmap(run1, sx/16, 15*sy/18, null);

    }

//knife hit

if(kspeed==20)

{

    kspeed=sx;

    health-=25;

    canvas.drawBitmap(note1, 0, 0, null);

}

//power take

if(powerrun==30)

{

    powerrun=3*sx;

    health+=25;

    canvas.drawBitmap(note2, 0, 0, null);

}

//power

powerrun=powerrun-10;

canvas.drawBitmap(powerimg, powerrun, 15*sy/18, null);

if(powerrun<0)

{

```

```

powerrun=3*sx/4;

}

//kinfe

kspeed=kspeed-20;

canvas.drawBitmap(kinfe, kspeed, 15*sy/18, null);

if(kspeed<0)

{

kspeed=sx;

}

// for jump

if(show==1)

{

if(sound==1)

{

jump.start();

}

canvas.drawBitmap(run2, sx/16, 3*sy/4, null);

//score

if(cspeed<=sx/8&&cspeed>=sx/16)

{

if(sound==1)

{

takecoin.start();

```

```

        }

        cspeed=sx/2;

        score+=10;

    }

// jump-hold

delay+=1;

if(delay==3)

{

    show=0;

    delay=0;

}

}

//for coins

cspeed=cspeed-5;

if(cspeed==sx/2)

{

    cspeed=sx/2;

    canvas.drawBitmap(coin, cspeed, 3*sy/4, null);

}

else

{

```

```

        canvas.drawBitmap(coin, cspeed, 3*sy/4, null);

    }

//score

Paint paint = new Paint();

paint.setColor(Color.BLUE);

paint.setAntiAlias(true);

paint.setFakeBoldText(true);

paint.setTextSize(15);

paint.setTextAlign(Align.LEFT);

canvas.drawText("Score :" + score, 3*sx/4, 20, paint);

//exit

canvas.drawBitmap(exit, 0, 0, null);

if(sound==1)

{

    mp1.start();

    mp1.setLooping(true);

}

else

{

    mp1.stop();

}

//health

Paint myPaint = new Paint();

myPaint.setColor(Color.RED);

myPaint.setStrokeWidth(10);

myPaint.setAntiAlias(true);

```

```

myPaint.setFakeBoldText(true);

canvas.drawText("Health :" + health, 0, (sy/8)-5, myPaint);

canvas.drawRect(0, sy/8, health, sy/8+10, myPaint);

//game over

if(health<=0)

{

    gameover=1;

    mp1.stop();

    //high score

    editor.putInt("score", score);

    editor.commit();

}

canvas.drawText("GAMEOVER OVER", sx/2, sy/2, myPaint);

canvas.drawText("YOUR SCORE : "+score, sx/2, sy/4, myPaint);

canvas.drawText("Restart", 91, 25, myPaint);

gameLoopThread.setPause(1);

canvas.drawBitmap(background, sx, sy, null);

}

// restart

if(reset==1)

{

    gameLoopThread.setPause(0);

    health=100;

    score=0;
}

```

```

        }

        canvas.drawBitmap(pause, (sx-25), 0, null);

    }

}

//phone state

public class TeleListener extends PhoneStateListener

{

    public void onCallStateChanged(int state, String incomingNumber)

    {

        if(state==TelephonyManager.CALL_STATE_RINGING)

        {

            mp1.stop();

            System.exit(0);

        }

    }

}

}

```

gameloop.java:

```

import android.annotation.SuppressLint;

import android.graphics.Canvas;

```

```
public class gameloop extends Thread {  
  
    private Game.GameView view;  
  
    static final long FPS = 10;  
  
    private boolean running = false;  
  
    boolean isPaused;  
  
  
    public gameloop(Game.GameView view) {  
  
        this.view = view;  
  
    }  
  
  
    public void setRunning(boolean run) {  
  
        running = run;  
  
    }  
  
  
    public void setPause(int i)  
    {  
  
        synchronized (view.getHolder())  
        {  
  
            if(i==0)  
            {  
  
                isPaused=false;  
  
            }  
  
            if(i==1)  
            {  
  
            }  
  
        }  
    }  
}
```

```

        isPaused = true;
    }

}

}

@Override

public void run() {
    long ticksPS = 100;
    long startTime = 0;
    long sleepTime;
    while (running) {
        //pause and resume

        if (isPaused)
        {
            try
            {
                this.sleep(50);
            }
            catch (InterruptedException e)
            {
                e.printStackTrace();
            }
        }
    }
}

```

```

else

{

    Canvas c = null;

    startTime = System.currentTimeMillis();

    try {

        c = view.getHolder().lockCanvas();

        synchronized (view.getHolder()) {

            view.onDraw(c);

        }

    }

    finally

    {

        if (c != null)

        {

            view.getHolder().unlockCanvasAndPost(c);

        }

    }

    sleepTime = ticksPS - (System.currentTimeMillis() - startTime);

}

try {

    if (sleepTime > 0)

```

```

        sleep(sleepTime);

    else

        sleep(10);

    }

    catch (Exception e) { }

}

}

```

Highscore.java:

```

import android.R.string;

import android.os.Bundle;

import android.app.Activity;

import android.content.SharedPreferences;

import android.content.SharedPreferences.Editor;

import android.view.Menu;

import android.widget.TextView;

public class Highscore extends Activity {

    TextView t1;

    int score,hscore;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

```

```

        setContentView(R.layout.activity_highscore);

        SharedPreferences pref =
getApplicationContext().getSharedPreferences("higher", MODE_PRIVATE);

        Editor editor = pref.edit();




        score=pref.getInt("score", 0);

        hscore=pref.getInt("hscore", 0);





        if(score>hscore)

        {

            editor.putInt("hscore", score);

            editor.commit();

        }

        hscore=pref.getInt("hscore", 0);





        t1=(TextView) findViewById(R.id.textView1);

        t1.setText("Highscore :" +hscore);

    }

}

```

Setting.java:

```

import android.os.Bundle;

import android.app.Activity;

import android.content.SharedPreferences;

import android.content.SharedPreferences.Editor;

import android.view.Menu;

```

```
import android.view.View;
import android.widget.CheckBox;
import android.widget.Toast;

public class Setting extends Activity {
    CheckBox ch1;
    int volume;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_setting);
        ch1=(CheckBox) findViewById(R.id.checkBox1);

        SharedPreferences pref =
getApplicationContext().getSharedPreferences("higher", MODE_PRIVATE);
        Editor editor = pref.edit();
        volume=pref.getInt("volume", 0);

        if(volume==1)
        {
            ch1.setChecked(true);
        }
    }
    public void volume(View v) {
        ch1 = (CheckBox)v;
        SharedPreferences pref =
getApplicationContext().getSharedPreferences("higher", MODE_PRIVATE);
```

```

Editor editor = pref.edit();

if(ch1.isChecked())
{
    editor.putInt("vlooume", 1);

    editor.commit();

    Toast.makeText(this,"volume on", Toast.LENGTH_LONG).show();
}

else
{
    editor.putInt("vlooume", 0);

    editor.commit();
}

@Override

public boolean onCreateOptionsMenu(Menu menu) {

    // Inflate the menu; this adds items to the action bar if it is present.

    getMenuInflater().inflate(R.menu.setting, menu);

    return true;
}
}

```

LAYOUT FILES:

activity_main.xml:

```

<?xml version="1.0"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools" android:layout_width="match_parent"

```

```

    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin" tools:context=".MainActivity"
    android:background="@drawable/back"><Button android:layout_width="wrap_content"
        android:layout_height="wrap_content" android:id="@+id/button2"
        android:layout_below="@+id/button4" android:layout_centerHorizontal="true"
        android:layout_marginTop="23dp" android:onClick="setting"
        android:text="@string/set"/><Button android:layout_width="wrap_content"
        android:layout_height="wrap_content" android:id="@+id/button3"
        android:layout_below="@+id/button2" android:layout_centerHorizontal="true"
        android:layout_marginTop="16dp" android:onClick="exit"
        android:text="@string/ex"/><Button android:layout_width="wrap_content"
        android:layout_height="wrap_content" android:id="@+id/button4"
        android:layout_below="@+id/button1" android:layout_centerHorizontal="true"
        android:layout_marginTop="19dp" android:onClick="highscore"
        android:text="@string(score"/><Button android:layout_width="wrap_content"
        android:layout_height="wrap_content" android:id="@+id/button1"
        android:layout_marginTop="43dp" android:onClick="play" android:text="@string/play"
        android:layout_alignLeft="@+id/button4"
        android:layout_alignParentTop="true"/></RelativeLayout>

```

activity_game.xml:

```

<?xml version="1.0"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools" android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin" tools:context=".Game">
</RelativeLayout>

```

activity_highscore.xml:

```

<?xml version="1.0"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools" android:layout_width="match_parent"
    android:layout_height="match_parent"

```

```

    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin" tools:context=".Highscore"
    android:background="@drawable/back"><TextView android:layout_width="wrap_content"
    android:layout_height="wrap_content" android:id="@+id/textView1"
    android:layout_alignParentLeft="true" android:layout_alignParentTop="true"
    android:layout_marginLeft="20dp" android:layout_marginTop="55dp"
    android:text="@string/hs"
    android:textAppearance="?android:attr/textAppearanceLarge"/></RelativeLayout>

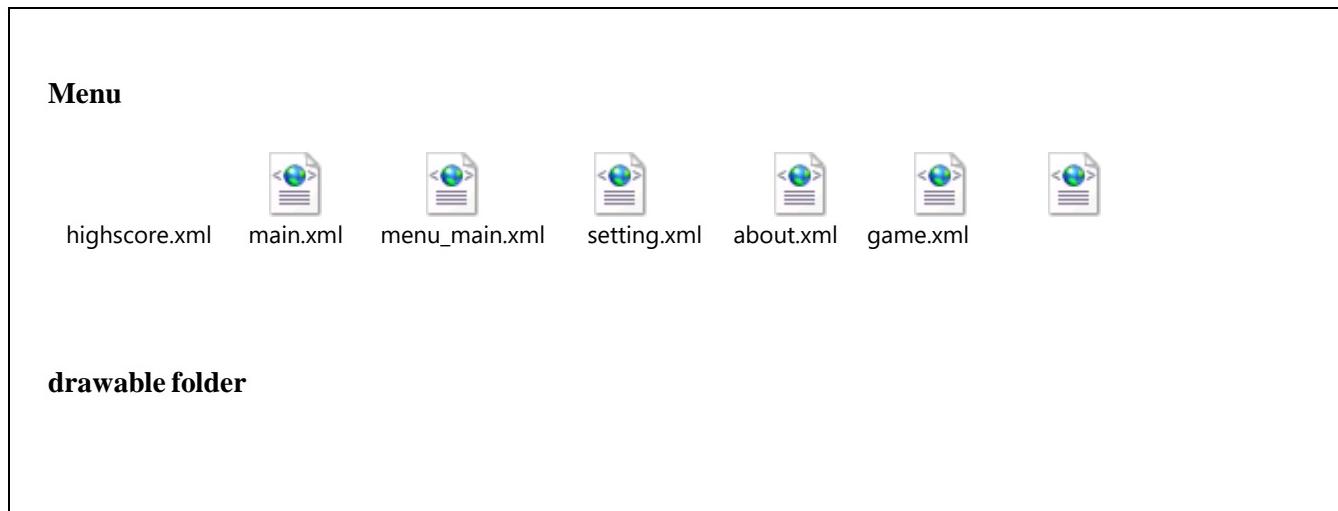
```

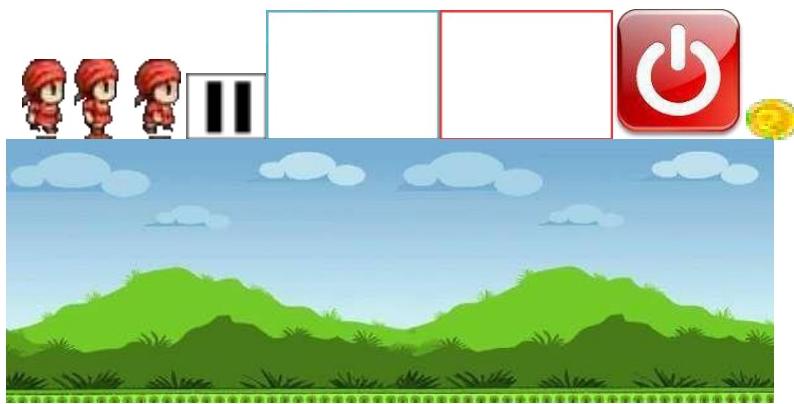
activity_setting.xml:

```

<?xml version="1.0"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools" android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin" tools:context=".Setting"
    android:background="@drawable/back"><CheckBox android:layout_width="wrap_content"
    android:layout_height="wrap_content" android:id="@+id/checkBox1"
    android:layout_alignParentLeft="true" android:layout_alignParentTop="true"
    android:layout_marginTop="45dp" android:text="@string/vol"
    android:onClick="volume"/></RelativeLayout>

```





raw folder:



strings.xml:

```
<?xml version="1.0" encoding="UTF-8"?>
<resources>

<string name="hello_world">Hello world!</string><string
name="title_activity_about">MainActivity</string><string
name="title_activity_game">Game</string><string name="play">Play
Now...</string><string name="set">Setting</string><string
name="ex">Exit</string><string name="title_activity_setting">Setting</string><string
name="vol">Volume</string><string name="test">test</string><string
name="title_activity_highscore">Highscore</string><string name="hs">Highscore
:</string><string name="score">HighScore</string></resources>
```

Code in manifest.xml file:

```
<?xml version="1.0" encoding="UTF-8"?>
<manifest package="manju.example.com.game"
xmlns:android="http://schemas.android.com/apk/res/android"><uses-permission
android:name="android.permission.READ_PHONE_STATE"/><application
android:theme="@style/AppTheme" android:supportsRtl="true"
```

```

    android:label="@string/app_name" android:icon="@mipmap/ic_launcher"
    android:allowBackup="true"><activity android:name=".MainActivity"
    android:theme="@style/AppTheme.NoActionBar" android:label="@string/app_name"><intent-
    filter><action android:name="android.intent.action.MAIN"/><category
    android:name="android.intent.category.LAUNCHER"/></intent-filter></activity><activity
    android:name="manju.example.com.game.Game" android:label="@string/title_activity_game"
    android:screenOrientation="landscape"> </activity><activity
    android:name="manju.example.com.game.Settings"
    android:label="@string/title_activity_setting" android:screenOrientation="portrait">
    </activity><activity android:name="manju.example.com.game.Highscore"
    android:label="@string/title_activity_highscore"> </activity></application></manifest>

```

After installing android studio into your system (say computer or laptop) —and after installation, when you open the android studio to create some project / application – you usually observe an error stating that: junit cannot be resolved. In order to solve this error, you need to go to C drive → and under C drive – you need to go to users → and under users – you need to go to manju folder → and under manju folder – you need to go to AndroidStudioProjects→ and under AndroidStudioProjects → you need to open Application folder → and you need to go to app folder → and under app folder → you need to open **libs** folder → and in libs folder – you need to place junit (executable jar file



– which can be downloaded on internet). And you need to open android studio → and you need to go to file → project structure → app → dependencies (if you click on it) – a window:



Choose library dependency will be opened and in that window you need to choose *m junit:junit:4.12* and press ok and that window will be disappeared and gradle build starts and your problem will be resolved.

- **Battery temperature**

MainActivity.java

```
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.content.IntentFilter;
import android.os.Bundle;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    TemperatureReceiver receiver=new TemperatureReceiver(this);
    TextView tempDisplay=null;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        tempDisplay=(TextView) findViewById(R.id.tempDisplay);

        IntentFilter localIntentFilter = new IntentFilter();
        localIntentFilter.addAction("android.intent.action.BATTERY_CHANGED");
        registerReceiver(receiver, localIntentFilter);
    }

}
```

TemperatureReceiver.java

```
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;

public class TemperatureReceiver extends BroadcastReceiver{
```

```

MainActivity activity=null;
public TemperatureReceiver(MainActivity mainActivity) {
    activity=mainActivity;
}
@Override
public void onReceive(Context arg0, Intent arg1) {
    activity.tempDisplay.setText(arg1.getIntExtra("temperature", 0)/10.0D+" ");
}

}

```

activity_main.xml

```

<?xml version="1.0"?>

<RelativeLayout tools:context=".MainActivity"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:layout_height="match_parent" android:layout_width="match_parent"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:text="Temperature " android:layout_alignParentLeft="true"
        android:id="@+id/textView1"/>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:text="0" android:id="@+id/tempDisplay" android:layout_centerHorizontal="true"
        android:layout_alignBottom="@+id/textView1"/>

</RelativeLayout>

```

- Web Search engine

MainActivity.java

```

import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.view.View;
import android.view.Menu;

```

```

import android.view.MenuItem;

import android.app.SearchManager;
import android.content.Intent;

import android.view.View.OnClickListener;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        //attach an instance of HandleClick to the Button
        findViewById(R.id.imageView1).setOnClickListener(new HandleClick());
    }

    private class HandleClick implements OnClickListener{
        public void onClick(View arg0) {
            String searchFor=((EditText)
            findViewById(R.id.editText1)).getText().toString();
            Intent viewSearch = new Intent(Intent.ACTION_WEB_SEARCH);
            viewSearch.putExtra(SearchManager.QUERY, searchFor);
            startActivity(viewSearch);
        }
    }
}

```

activity_main.xml

```

<?xml version="1.0" encoding="UTF-8" ?>

<LinearLayout android:orientation="vertical" android:layout_height="fill_parent"
    android:layout_width="fill_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <TextView android:layout_height="wrap_content" android:layout_width="fill_parent"
        android:textSize="20dp" android:text="@string/prompt"/>

    <EditText android:layout_height="wrap_content" android:layout_width="fill_parent"
        android:id="@+id/editText1">

        <requestFocus/>

```

```

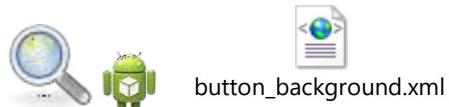
</EditText>

    <ImageView android:layout_height="wrap_content"
    android:layout_width="wrap_content" android:id="@+id/imageView1"
    android:src="@drawable/magglass" android:background="@drawable/button_background"/>

</LinearLayout>

```

Drawable folder



Android manifest.xml

```
<uses-permission android:name="android.permission.INTERNET" />
```

- Display of WEBSITE link on layout file

Code in layout file:

```

<TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:textStyle="bold" android:text="http://androidSRC.net/" android:autoLink="web"
    android:layout_marginBottom="20dp" android:layout_marginTop="20dp"
    android:layout_gravity="center_horizontal"/>

```

Android manifest.xml

```
<uses-permission android:name="android.permission.INTERNET" />
```

- SIM Number display

MainActivity.java

```

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;

```

```

import android.view.View;
import android.content.Intent;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    public void onButtonClick(View v) {
        if (v.getId() == R.id.BtnDisplay)

        {
            Intent i = new Intent(MainActivity.this, Sendmsg.class);
            startActivity(i);
        }
    }
}

```

Sendmsg.java

```

import android.os.Bundle;
import android.app.Activity;
import android.content.Context;
import android.content.SharedPreferences;
import android.telephony.TelephonyManager;
import android.widget.TextView;
import android.widget.Toast;

public class Sendmsg extends Activity {

    SharedPreferences sp=null;
    SharedPreferences.Editor edit;
    TelephonyManager telemananger=null;
    TelephonyManager telemanager2=null;
    String anothervar=null;
    String var=null;
    @Override

```

```

protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.sendms);
    telemananger = (TelephonyManager) getSystemService(Context.TELEPHONY_SERVICE);
    anothervar = telemananger.getSimSerialNumber();

    sp=getSharedPreferences("share1",Activity.MODE_APPEND);
    edit=sp.edit();

    var=sp.getString("sim_no",null);
    if(var==null)
    {

        sp.edit().putString("sim_no",anothervar).commit();
        var=sp.getString("sim_no",null);
        TextView tv=(TextView)findViewById(R.id.textView2);
        tv.setText(String.valueOf(anothervar));
    }
    else
        Toast.makeText(this, "hi..", Toast.LENGTH_LONG).show();
    TextView tv=(TextView)findViewById(R.id.textView4);
    tv.setText(String.valueOf("this is the value of shared preferences.....
    =" + var));
}

}

```

Comp.java

```

import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;

public class Comp extends BroadcastReceiver {
    @Override
    public void onReceive(Context c, Intent i)
    {

        Intent a=new Intent(c,Sendmsg.class);
        a.addFlags(Intent.FLAG_ACTIVITY_NEW_TASK);
        c.startActivity(a);
    }
}

```

```
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8" ?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context=".MainActivity">

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Button1"
        android:id="@+id/Bdisplay"
        android:layout_alignParentBottom="true"
        android:layout_centerHorizontal="true"
        android:layout_marginBottom="177dp"
        android:onClick="onButtonClick" />

</RelativeLayout>
```

sendms.xml

```
<?xml version="1.0" encoding="utf-8" ?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical" >

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Sim Number:" />

    <TextView
```

```

        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="" />

<TextView
    android:id="@+id/textView3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="New Sim Number:"
    android:textAppearance="?android:attr/textAppearanceLarge" />

<TextView
    android:id="@+id/textView4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="" />

</LinearLayout>

```

Android manifest.xml

```

<uses-permission android:name="android.permission.READ_PHONE_STATE"/>

<uses-permission android:name="android.permission.RECEIVE_BOOT_COMPLETED"/>

<activity android:name=".Sendmsg"/>

<receiver android:name=".Comp"/>

```

- Popup window

MainActivity.java

```

import android.content.Intent;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.app.Activity;
import android.content.Context;
import android.os.Bundle;
import android.view.Gravity;
import android.view.LayoutInflater;

```

```

import android.view.View;
import android.view.ViewGroup;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.PopupWindow;

public class MainActivity extends AppCompatActivity {

    Button btnClosePopup;
    Button btnCreatePopup;

    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btnCreatePopup = (Button) findViewById(R.id.button1);
        btnCreatePopup.setOnClickListener(new OnClickListener() {

            @Override
            public void onClick(View v) {
                // TODO Auto-generated method stub
                initiatePopupWindow();
            }
        });
    }

    private PopupWindow pwindo;

    private void initiatePopupWindow() {
        try {
            // We need to get the instance of the LayoutInflater
            LayoutInflater inflater = (LayoutInflater) MainActivity.this
                    .getSystemService(Context.LAYOUT_INFLATER_SERVICE);
            View layout = inflater.inflate(R.layout.screen_popup,
                    ViewGroup) findViewById(R.id.popup_element));
            pwindo = new PopupWindow(layout, 300, 370, true);
            pwindo.showAtLocation(layout, Gravity.CENTER, 0, 0);

            btnClosePopup = (Button) layout.findViewById(R.id.btn_close_popup);
            btnClosePopup.setOnClickListener(cancel_button_click_listener);

        } catch (Exception e) {
    
```

```

        e.printStackTrace();
    }

}

private OnClickListener cancel_button_click_listener = new OnClickListener() {
    public void onClick(View v) {
        pwindo.dismiss();

    }
};

}

```

activity_main.xml

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="vertical"
    android:weightSum="1">

    <TextView
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="@string/hello" />

    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Button" />

</LinearLayout>

```

screen_popup.xml

```

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/popup_element"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:background="#444444"

```

```

    android:orientation="vertical"
    android:padding="10sp" >

    <TableLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"></TableLayout>

    <Button
        android:layout_marginTop="50dp"
        android:id="@+id	btn_close_popup"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:text="Close" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Button1"
        android:id="@+id/Bdisplay"
        android:layout_alignParentBottom="true"
        android:layout_centerHorizontal="true"
        android:layout_marginBottom="177dp"
        android:onClick="onButtonClick"
        android:layout_gravity="center_horizontal" />

</LinearLayout>

```

- LIST VIEW

MainActivity.java

```

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.ListView;

public class MainActivity extends AppCompatActivity {

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

```

```

        setContentView(R.layout.activity_main);

        ListView list = (ListView) findViewById(R.id.list1);

        String[] days = { "Sunday", "Monday", "Tuesday", "Wednesday",
                          "Thursday", "Friday", "Saturday", "Sunday", "Monday", "Tuesday",
                          "Wednesday",
                          "Thursday", "Friday", "Saturday"

        };

        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
                        android.R.layout.simple_list_item_1, days);

        list.setAdapter(adapter);
    }

}

```

activity_main.xml

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent" >

    <ListView
        android:id="@+id/list1"
        android:layout_width="match_parent"
        android:layout_height="match_parent" >
    </ListView>
</RelativeLayout>

```

- AGE CALCULATOR

MainActivity.java

```

import java.util.Calendar;
import java.util.Timer;
import android.os.Bundle;
import android.app.Activity;
import android.app.DatePickerDialog;
import android.app.Dialog;
import android.view.Menu;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.DatePicker;
import android.widget.TextView;

```

```

import android.widget.Toast;

public class MainActivity extends Activity implements OnClickListener{
    private Button btnStart;
    static final int DATE_START_DIALOG_ID = 0;
    private int startYear=1970;
    private int startMonth=6;
    private int startDay=15;
    private AgeCalculation age = null;
    private TextView currentDate;
    private TextView birthDate;
    private TextView result;
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        age=new AgeCalculation();
        currentDate=(TextView) findViewById(R.id.textView1);
        currentDate.setText("Current Date(DD/MM/YY) : "+age.getCurrentDate());
        birthDate=(TextView) findViewById(R.id.textView2);
        result=(TextView) findViewById(R.id.textView3);
        btnStart=(Button) findViewById(R.id.button1);
        btnStart.setOnClickListener(this);

    }

    @Override
    protected Dialog onCreateDialog(int id) {
        switch (id) {
            case DATE_START_DIALOG_ID:
                return new DatePickerDialog(this,
                        mDateSetListener,
                        startYear, startMonth, startDay);
        }
        return null;
    }

    private DatePickerDialog.OnDateSetListener mDateSetListener
            = new DatePickerDialog.OnDateSetListener() {
        public void onDateSet(DatePicker view, int selectedYear,
                             int selectedMonth, int selectedDay) {
            startYear=selectedYear;
            startMonth=selectedMonth;
            startDay=selectedDay;
        }
    }
}

```

```

        age.setDateOfBirth(startYear, startMonth, startDay);
        birthDate.setText("Date of Birth(DD/MM/YY) :
"+selectedDay+": "+(startMonth+1)+": "+startYear);
        calculateAge();
    }
};

public void onClick(View v) {
    // TODO Auto-generated method stub
    switch (v.getId()) {
        case R.id.button1:
            showDialog(DATE_START_DIALOG_ID);
            break;

        default:
            break;
    }
}

private void calculateAge()
{
    age.calcualteYear();
    age.calcualteMonth();
    age.calcualteDay();
    Toast.makeText(getApplicationContext(), "click the resulted
button"+age.getResult() , Toast.LENGTH_SHORT).show();
    result.setText("AGE (DD/MM/YY) : "+age.getResult());
}
}

```

AgeCalculation.java

```

import java.util.Calendar;
import java.util.Date;

public class AgeCalculation {
    private int startYear;
    private int startMonth;
    private int startDay;
    private int endYear;
    private int endMonth;
    private int endDay;
    private int resYear;
    private int resMonth;
}

```

```

private int resDay;
private Calendar start;
private Calendar end;
public String getCurrentDate()
{
    end=Calendar.getInstance();
    endYear=end.get(Calendar.YEAR);
    endMonth=end.get(Calendar.MONTH);
    endMonth++;
    endDay=end.get(Calendar.DAY_OF_MONTH);
    return endDay+":"+endMonth+":"+endYear;
}
public void setDateOfBirth(int sYear, int sMonth, int sDay)
{
    startYear=sYear;
    startMonth=sMonth;
    startMonth++;
    startDay=sDay;

}
public void calcualteYear()
{
    resYear=endYear-startYear;
}

public void calcualteMonth()
{
    if(endMonth>=startMonth)
    {
        resMonth= endMonth-startMonth;
    }
    else
    {
        resMonth=endMonth-startMonth;
        resMonth=12+resMonth;
        resYear--;
    }
}
public void calcualteDay()
{
    if(endDay>=startDay)

```

```

    {
        resDay= endDay-startDay;
    }
    else
    {
        resDay=endDay-startDay;
        resDay=30+resDay;
        if(resMonth==0)
        {
            resMonth=11;
            resYear--;
        }
        else
        {
            resMonth--;
        }
    }
}

public String getResult()
{
    return resDay+":"+resMonth+":"+resYear;
}
public long getSeconde()
{
    start=Calendar.getInstance();
    start.set(Calendar.YEAR, startYear);
    start.set(Calendar.MONTH, startMonth);
    start.set(Calendar.DAY_OF_MONTH, startDay);
    start.set(Calendar.HOUR, 12);
    start.set(Calendar.MINUTE, 30);
    start.set(Calendar.SECOND, 30);
    start.set(Calendar.MILLISECOND, 30);
    long now=end.getTimeInMillis();
    long old=start.getTimeInMillis();
    long diff=old-now;
    return diff/1000;
}
}

```

activity_main.xml

```

<?xml version="1.0"?>

    <RelativeLayout android:layout_height="match_parent"
        android:layout_width="match_parent" xmlns:tools="http://schemas.android.com/tools"
        xmlns:android="http://schemas.android.com/apk/res/android">

        <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
            android:text="Date Of Birth" android:layout_alignParentTop="true"
            android:layout_alignParentRight="true" android:layout_alignParentLeft="true"
            android:id="@+id/button1"/>

        <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
            android:text="Current Date" android:layout_alignParentLeft="true"
            android:id="@+id/textView1" android:layout_marginTop="23dp"
            android:layout_below="@+id/button1"/>

        <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
            android:text="Birth Date" android:layout_alignParentLeft="true"
            android:id="@+id/textView2" android:layout_marginTop="18dp"
            android:layout_below="@+id/textView1"/>

        <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
            android:text="Result" android:layout_alignParentLeft="true"
            android:id="@+id/textView3" android:layout_marginTop="16dp"
            android:layout_below="@+id/textView2"/>

    </RelativeLayout>

```

- Send sms

MainActivity.java

```

import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.app.Activity;
import android.os.Bundle;
import android.telephony.gsm.SmsManager;
import android.view.Menu;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.EditText;

```

```

import android.widget.Toast;
import android.view.View;
import android.view.Menu;

public class MainActivity extends AppCompatActivity {

    Button btnSend;
    EditText txtPhoneNo;
    EditText txtSMS;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.content_main);

        btnSend=(Button) findViewById(R.id.buttonSend);
        txtPhoneNo=(EditText) findViewById(R.id.editTextPhoneNo);
        txtSMS=(EditText) findViewById(R.id.editTextSMS);

        btnSend.setOnClickListener(new OnClickListener() {

            @Override
            public void onClick(View v) {
                // TODO Auto-generated method stub
                String phoneNo=txtPhoneNo.getText().toString();
                String SMS=txtSMS.getText().toString();

                try {
                    SmsManager smsManager=SmsManager.getDefault();
                    smsManager.sendTextMessage(phoneNo, null, SMS, null, null);
                    Toast.makeText(getApplicationContext(),"SMS Sent!",Toast.LENGTH_LONG).show();

                } catch (Exception e) {
                    Toast.makeText(getApplicationContext(),"SMS failed, please try again later!",Toast.LENGTH_LONG).show();
                    e.printStackTrace();
                }
            }
        });
    }
}

```

```

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    // Inflate the menu; this adds items to the action bar if it is present.
    getMenuInflater().inflate(R.menu.menu_main, menu);
    return true;
}

}

```

activity_main.xml

```

<?xml version="1.0" encoding="UTF-8"?>

<LinearLayout
    android:orientation="vertical"
    android:layout_height="fill_parent"
    android:layout_width="fill_parent"
    android:id="@+id/linearLayout1"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <TextView
        android:layout_height="wrap_content"
        android:layout_width="wrap_content"
        android:id="@+id/textViewPhoneNo"
        android:textAppearance="?android:attr/textAppearanceLarge"
        android:text="Enter Phone Number : "/>

        <EditText android:layout_height="wrap_content"
        android:layout_width="fill_parent"
        android:id="@+id/editTextPhoneNo"
        android:phoneNumber="true"> </EditText>

    <TextView
        android:layout_height="wrap_content"
        android:layout_width="wrap_content"
        android:id="@+id/textViewSMS"
        android:textAppearance="?android:attr/textAppearanceLarge"
        android:text="Enter SMS Message : "/>

        <EditText
        android:layout_height="wrap_content"
        android:layout_width="fill_parent"
        android:id="@+id/editTextSMS"

```

```

    android:gravity="top"
    android:lines="5"
    android:inputType="textMultiLine"/>

    <Button
        android:layout_height="wrap_content"
        android:layout_width="fill_parent"
        android:id="@+id/buttonSend"
        android:text="Send"/>

</LinearLayout>

```

Android manifest.xml

```
<uses-permission android:name="android.permission.SEND_SMS" />
```

- Flash light (torch)

MainActivity.java

```

import android.app.Activity;
import android.app.AlertDialog;
import android.content.DialogInterface;
import android.content.pm.PackageManager;
import android.hardware.Camera;
import android.hardware.Camera.Parameters;
import android.media.MediaPlayer;
import android.media.MediaPlayer.OnCompletionListener;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.util.Log;
import android.view.View;
import android.widget.ImageButton;

public class MainActivity extends AppCompatActivity {

    private ImageButton btnSwitch;

    private Camera camera;
    private boolean isFlashOn;
    private boolean hasFlash;

```

```

private Parameters params;
private MediaPlayer mp;

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.content_main);

    // flash switch button
    btnSwitch = (ImageButton) findViewById(R.id.btnSwitch);
}

/*
 * First check if device is supporting flashlight or not
 */
hasFlash = getApplicationContext().getPackageManager()
    .hasSystemFeature(PackageManager.FEATURE_CAMERA_FLASH);

if (!hasFlash) {
    // device doesn't support flash
    // Show alert message and close the application
    AlertDialog alert = new AlertDialog.Builder(MainActivity.this)
        .create();
    alert.setTitle("Error");
    alert.setMessage("Sorry, your device doesn't support flash light!");
    alert.setPositiveButton("OK", new DialogInterface.OnClickListener() {
        public void onClick(DialogInterface dialog, int which) {
            // closing the application
            finish();
        }
    });
    alert.show();
    return;
}

// get the camera
getCamera();

// displaying button image
toggleButtonImage();

/*
 * Switch button click event to toggle flash on/off
 */
btnSwitch.setOnClickListener(new View.OnClickListener() {

```

```

@Override
public void onClick(View v) {
    if (isFlashOn) {
        // turn off flash
        turnOffFlash();
    } else {
        // turn on flash
        turnOnFlash();
    }
}

/* 
 * Get the camera
 */
private void getCamera() {
    if (camera == null) {
        try {
            camera = Camera.open();
            params = camera.getParameters();
        } catch (RuntimeException e) {
            Log.e("Camera Error. Failed to Open. Error: ", e.getMessage());
        }
    }
}

/*
 * Turning On flash
*/
private void turnOnFlash() {
    if (!isFlashOn) {
        if (camera == null || params == null) {
            return;
        }
        // play sound
        playSound();

        params = camera.getParameters();
        params.setFlashMode(Parameters.FLASH_MODE_TORCH);
        camera.setParameters(params);
        camera.startPreview();
        isFlashOn = true;
    }
}

```

```

        // changing button/switch image
        toggleButtonImage();
    }

}

/*
 * Turning Off flash
 */
private void turnOffFlash() {
    if (isFlashOn) {
        if (camera == null || params == null) {
            return;
        }
        // play sound
        playSound();

        params = camera.getParameters();
        params.setFlashMode(Parameters.FLASH_MODE_OFF);
        camera.setParameters(params);
        camera.stopPreview();
        isFlashOn = false;

        // changing button/switch image
        toggleButtonImage();
    }
}

/*
 * Playing sound will play button toggle sound on flash on / off
 */
private void playSound() {
    if (isFlashOn) {
        mp = MediaPlayer.create(MainActivity.this, R.raw.light_switch_off);
    } else {
        mp = MediaPlayer.create(MainActivity.this, R.raw.light_switch_on);
    }
    mp.setOnCompletionListener(new OnCompletionListener() {

        @Override
        public void onCompletion(MediaPlayer mp) {
            // TODO Auto-generated method stub
            mp.release();
        }
    });
}

```

```

        }
    });

    mp.start();
}

/*
 * Toggle switch button images changing image states to on / off
 */
private void toggleButtonImage() {
    if (isFlashOn) {
        btnSwitch.setImageResource(R.drawable.btn_switch_on);
    } else {
        btnSwitch.setImageResource(R.drawable.btn_switch_off);
    }
}

@Override
protected void onDestroy() {
    super.onDestroy();
}

@Override
protected void onPause() {
    super.onPause();

    // on pause turn off the flash
    turnOffFlash();
}

@Override
protected void onRestart() {
    super.onRestart();
}

@Override
protected void onResume() {
    super.onResume();

    // on resume turn on the flash
    if (hasFlash)
        turnOnFlash();
}

@Override

```

```

protected void onStart() {
    super.onStart();

    // on starting the app get the camera params
    getCamera();
}

@Override
protected void onStop() {
    super.onStop();

    // on stop release the camera
    if (camera != null) {
        camera.release();
        camera = null;
    }
}
}

```

activity_main.xml

```

<?xml version="1.0"?>

<LinearLayout tools:context=".MainActivity" android:orientation="vertical"
    android:gravity="center" android:background="@android:color/darker_gray"
    android:layout_height="match_parent" android:layout_width="match_parent"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <ImageButton android:background="@null" android:layout_height="wrap_content"
        android:layout_width="wrap_content" android:src="@drawable	btn_switch_on"
        android:contentDescription="@null" android:id="@+id/btnSwitch"/>

</LinearLayout>

```

Android manifest.xml

```

<uses-permission android:name="android.permission.CAMERA"/>

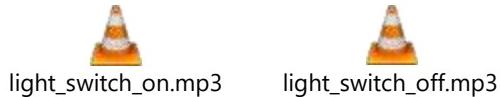
<uses-feature android:name="android.hardware.camera"/>

```

Drawable folder



Raw folder



- Bluetooth activation

MainActivity.java

```
import android.os.Bundle;
import android.os.Bundle;
import android.view.View;
import android.widget.Toast;
import android.app.Activity;
import android.bluetooth.BluetoothAdapter;

import android.support.v7.app.AppCompatActivity;

import android.view.View;

public class MainActivity extends AppCompatActivity {

    BluetoothAdapter bt = null;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        //initialize bluetooth adapter object
        bt = BluetoothAdapter.getDefaultAdapter();
```

```

}

//this method will call when we click on button
public void action(View v) {
    //if bluetooth not found
    if (bt == null) {
        Toast.makeText(this, "No bluetooth found.." + bt,
                      Toast.LENGTH_LONG).show();
    } else {
        if (!bt.isEnabled()) {
            //*****first method to enable bluetooth*****
            //enable bluetooth without pop-up any dialog box
            bt.enable();
            //*****Second method to enable bluetooth*****
            //Pop-up dialog box to confirm to enable bluetooth
/*Intent i=new Intent(BluetoothAdapter.ACTION_REQUEST_ENABLE);
startActivity(i); */

            //Display bluetooth device value on Toast
            Toast.makeText(this, "bluetooth found.." + bt,
                           Toast.LENGTH_LONG).show();
        } else {
            //disable bluetooth
            bt.disable();
        }
    }
}
}

```

activity_main.xml

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#024" >
    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true"
        android:onClick="action"
        android:text="Enable and disable bluetooth"
    >

```

```

        android:textSize="18sp" />
</RelativeLayout>
```

Android manifest.xml

```

<uses-permission android:name="android.permission.BLUETOOTH"/>
<uses-permission android:name="android.permission.BLUETOOTH_ADMIN"/>
```

- Wifi activation

MainActivity.java

```

import android.net.wifi.WifiManager;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.support.v7.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    WifiManager wm;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    //this method will call on button click
    public void wwf(View v)
    {
        Button b1=(Button)findViewById(R.id.button1);
        //get Wifi service
        wm=(WifiManager) getSystemService(WIFI_SERVICE);
        //Check Wifi is on or off
        if(wm.isWifiEnabled())
        {
            b1.setText("Wifi OFF");
            //enable or disable Wifi
            //for enable pass true value
            //for disable pass false value
            wm.setWifiEnabled(false);
        }
        else
```

```

    {
        b1.setText("Wifi ON");
        wm.setWifiEnabled(true);
    }
}

}

```

activity_main.xml

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#b21">
    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true"
        android:onClick="wwf"
        android:text="Wifi OFF"
        android:textSize="30sp" />
</RelativeLayout>

```

Android manifest.xml

```

<uses-permission android:name="android.permission.ACCESS_WIFI_STATE"/>
<uses-permission android:name="android.permission.CHANGE_WIFI_STATE"/>

```

- Login form using sqlite database

Main activity.java

```

import android.os.Bundle;
import android.view.View;
import android.app.Activity;
import android.content.Intent;

public class MainActivity extends Activity {

```

```

Intent i=null;
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
}

public void login_sigin(View v)
{
    switch(v.getId())
    {
        case R.id.log_in:
            i=new Intent(this,Login.class);
            startActivityForResult(i, 500);
            overridePendingTransition(R.anim.slide_in_right,
R.anim.slide_out_left);
            break;
        case R.id.sign_in:
            i=new Intent(this,Signin.class);
            startActivityForResult(i, 500);
            overridePendingTransition(R.anim.slide_in_right,
R.anim.slide_out_left);;;
            break;
    }
}
@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    overridePendingTransition(R.anim.slide_in_left, R.anim.slide_out_right);
}
}

```

Login.java

```

import android.app.Activity;
import android.content.Intent;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.os.Bundle;
import android.text.InputType;
import android.view.View;
import android.widget.EditText;
import android.widget.ImageView;
import android.widget.Toast;

```

```

public class Login extends Activity{
    Intent i=null;
    ImageView im=null;
    EditText tv1,tv4;
    boolean flag=false;
    SQLiteDatabase db=null;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.login);
        im=(ImageView)findViewById(R.id.show_hide2);
        tv1=(EditText)findViewById(R.id.phone2);
        tv4=(EditText)findViewById(R.id.password2);
        db=openOrCreateDatabase("mydb", MODE_PRIVATE, null);
        // db.execSQL("create table if not exists login(name varchar,mobile_no
        varchar,email_id varchar,password varchar,flag varchar)");
    }

    im.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View arg0) {

            if(flag==false)
            {
                im.setImageResource(R.drawable.hide);
                tv4.setInputType(InputType.TYPE_TEXT_VARIATION_PASSWORD);
                flag=true;
            }
            else
            {
                im.setImageResource(R.drawable.show);
                tv4.setInputType(129);
                flag=false;
            }
        }
    });
}

public void action(View v)
{
    switch(v.getId())
    {
        case R.id.signin2:

```

```

        i=new Intent(this,Signin.class);
        startActivityForResult(i, 500);
        overridePendingTransition(R.anim.slide_in_top,
R.anim.slide_out_bottom);
        finish();
        break;
    case R.id.start:
        String mobile_no=tv1.getText().toString();
        String password=tv4.getText().toString();
        if(mobile_no==null||mobile_no=="'||mobile_no.length()<10)
        {
            show("Please Enter Correct mobile number.");
        }
        else if(password==null||password=="'||password.length()<6)
        {
            show("Please Enter Correct Password.");
        }
        else
        {
            Cursor c=db.rawQuery("select * from login where
mobile_no='"+mobile_no+"' and password='"+password+"'",null);
            c.moveToFirst();
            if(c.getCount ()>0)
            {
                i=new Intent(this,Welcome.class);
                startActivityForResult(i,500);
                overridePendingTransition(R.anim.slide_in_right,
R.anim.slide_out_left);
                db.close();
                finish();
            }
            else
                show("Wrong Password or Mobile number.");
        }
    }
}

@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    overridePendingTransition(R.anim.slide_in_left, R.anim.slide_out_right);
}

public void show(String str)

```

```

    }

    Toast.makeText(this, str, Toast.LENGTH_LONG).show();
}

}

```

Signin.java

```

import android.app.Activity;
import android.content.Intent;
import android.database.sqlite.SQLiteDatabase;
import android.os.Bundle;
import android.text.InputType;
import android.view.View;
import android.widget.EditText;
import android.widget.ImageView;
import android.widget.Toast;

public class Signin extends Activity{
    Intent i=null;
    ImageView im=null;
    EditText tv1,tv2,tv3,tv4;
    boolean flag=false;
    SQLiteDatabase db=null;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.signin);
        im=(ImageView)findViewById(R.id.show_hide);
        tv1=(EditText)findViewById(R.id.name);
        tv2=(EditText)findViewById(R.id.email_id);
        tv3=(EditText)findViewById(R.id.phone);
        tv4=(EditText)findViewById(R.id.password);
        db=openOrCreateDatabase("mydb", MODE_PRIVATE, null);
        db.execSQL("create table if not exists login(name varchar,mobile_no
varchar,email_id varchar,password varchar,flag varchar)");

        im.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View arg0) {

                if(flag==false)
                {

```

```

        im.setImageResource(R.drawable.hide);
        tv4.setInputType(InputType.TYPE_TEXT_VARIATION_PASSWORD);
        flag=true;
    }
    else
    {
        im.setImageResource(R.drawable.show);
        tv4.setInputType(129);
        flag=false;
    }
}
});

}

public void action(View v)
{
    switch(v.getId())
    {
        case R.id.login:
            i=new Intent(this,Login.class);
            startActivityForResult(i, 500);
            overridePendingTransition(R.anim.slide_in_top,
R.anim.slide_out_bottom);
            finish();
            break;
        case R.id.signin:
            String name=tv1.getText().toString();
            String email_id=tv2.getText().toString();
            String mobile_no=tv3.getText().toString();
            String password=tv4.getText().toString();
            if(name==null || name==" " || name.length()<3)
            {
                show("Please Enter Correct Name.");
            }
            else if(mobile_no==null || mobile_no==" " || mobile_no.length()<10)
            {
                show("Please Enter Correct mobile number.");
            }
            else if(email_id==null || email_id==" " || email_id.length()<10)
            {
                show("Please Enter Correct Email id.");
            }
            else if(password==null || password==" " || password.length()<6)

```

```

        {
            show("Please Enter Strong Password.");
        }
    else
    {
        db.execSQL("insert into login
values('"+name+"','"+mobile_no+"','"+email_id+"','"+password+"','nothing')");
        i=new Intent(this,Welcome.class);
        startActivityForResult(i, 500);
        overridePendingTransition(R.anim.slide_in_right,
R.anim.slide_out_left);
        db.close();
        finish();
    }
    break;
}
}

@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    overridePendingTransition(R.anim.slide_in_left, R.anim.slide_out_right);
}

public void show(String str)
{
    Toast.makeText(this, str, Toast.LENGTH_LONG).show();
}
}

```

Welcome.java

```

import android.app.Activity;
import android.os.Bundle;

public class Welcome extends Activity{

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.welcome);
    }
}

```

activity_main.xml

```
<?xml version="1.0"?>

    <RelativeLayout android:background="#999999"
        android:layout_height="fill_parent"
        android:layout_width="fill_parent"
        xmlns:android="http://schemas.android.com/apk/res/android">

        <LinearLayout
            android:layout_height="wrap_content"
            android:layout_width="fill_parent"
            android:layout_alignParentBottom="true">

            <Button
                android:layout_height="wrap_content"
                android:layout_width="wrap_content"
                android:onClick="login_sigin"
                android:text="Sign In"
                android:textSize="20sp"
                android:layout_weight="1"
                android:id="@+id/sign_in"/>

            <Button
                android:layout_height="wrap_content"
                android:layout_width="wrap_content"
                android:onClick="login_sigin"
                android:text="Log In"
                android:textSize="20sp"
                android:layout_weight="1"
                android:id="@+id/log_in"/>

        </LinearLayout>

        <TextView android:background="#cccccc"
            android:layout_height="wrap_content"
            android:layout_width="wrap_content"
            android:text=" Welcome "
            android:textSize="25sp"
            android:id="@+id/text"
            android:textColor="#333333"
            android:textAppearance="?android:attr/textAppearanceLarge"
            android:gravity="center">
    
```

```
    android:layout_alignParentTop="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentLeft="true"/>

```



```
</RelativeLayout>
```

login.xml

```
<?xml version="1.0"?>

    <RelativeLayout android:background="#999999" android:layout_height="fill_parent"
        android:layout_width="fill_parent"
        xmlns:android="http://schemas.android.com/apk/res/android">

        <RelativeLayout
            android:background="@android:drawable/edit_text"
            android:layout_height="wrap_content"
            android:layout_width="wrap_content"
            android:gravity="center_vertical"
            android:baselineAligned="false"
            android:addStatesFromChildren="true"
            android:layout_centerVertical="true"
            android:layout_alignRight="@+id/phone2"
            android:layout_alignLeft="@+id/phone2"
            android:id="@+id/r1">

            <ImageView
                android:background="@drawable/show"
                android:layout_height="wrap_content"
                android:layout_width="wrap_content"
                android:id="@+id/show_hide2"
                android:layout_marginTop="4dp"
                android:layout_alignParentTop="true"
                android:layout_alignBottom="@+id/r1"
                android:layout_alignParentRight="true"
                style="@android:style/Widget.Button.Inset"/>

            <EditText
                android:background="@null"
                android:layout_height="wrap_content"
                android:layout_width="wrap_content"
                android:id="@+id/password2"

```

```

        android:layout_alignParentTop="true"
        android:layout_alignBottom="@+id/r1"
        android:singleLine="true"
        android:maxLines="1"
        android:inputType="textPassword"
        android:hint="Password"
        android:focusableInTouchMode="true"
        android:focusable="true"
        android:maxLength="40"
        android:ems="10"
        android:layout_toLeftOf="@+id/show_hide2"
        android:layout_alignParentLeft="true"/>

    </RelativeLayout>

    <EditText android:layout_height="wrap_content"
        android:layout_width="wrap_content"
        android:id="@+id/phone2"
        android:inputType="phone"
        android:hint="Mobile No."
        android:maxLength="10"
        android:ems="10"
        android:layout_centerHorizontal="true"
        android:layout_above="@+id/r1">

        <requestFocus/>

    </EditText>

    <Button
        android:layout_height="wrap_content"
        android:layout_width="wrap_content" android:id="@+id/signin2"
        android:layout_alignParentTop="true" android:layout_alignParentRight="true"
        android:layout_alignParentLeft="true" android:textSize="20sp" android:onClick="action"
        android:text="Sign in"/>

        <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:layout_alignRight="@+id/r1" android:layout_alignLeft="@+id/r1"
        android:id="@+id/start" android:layout_marginTop="10dp" android:textSize="20sp"
        android:onClick="action" android:text="Continue.." android:layout_below="@+id/r1"/>

    </RelativeLayout>

```

signin.xml

```
<?xml version="1.0"?>

    <RelativeLayout android:background="#999999" android:layout_height="fill_parent"
    android:layout_width="fill_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

        <EditText android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:inputType="textEmailAddress" android:maxLength="40" android:hint="Email id"
        android:ems="10" android:layout_centerVertical="true"
        android:layout_alignLeft="@+id/phone" android:id="@+id/email_id"> </EditText>

        <EditText android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:inputType="number" android:maxLength="10" android:hint="Mobile No."
        android:ems="10" android:id="@+id/phone" android:layout_centerHorizontal="true"
        android:layout_above="@+id/email_id"/>

        <EditText android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:inputType="textPersonName" android:maxLength="30" android:hint="Name"
        android:ems="10" android:id="@+id/name" android:layout_centerHorizontal="true"
        android:layout_above="@+id/phone">

            <requestFocus/>

        </EditText>

        <RelativeLayout android:background="@android:drawable/edit_text"
        android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:layout_alignLeft="@+id/email_id" android:id="@+id/r1"
        android:gravity="center_vertical" android:baselineAligned="false"
        android:addStatesFromChildren="true" android:layout_below="@+id/email_id"
        android:layout_alignRight="@+id/email_id">

            <ImageView android:background="@drawable/show"
            android:layout_height="wrap_content" android:layout_width="wrap_content"
            android:id="@+id/show_hide" android:layout_marginTop="4dp"
            android:layout_alignParentTop="true" android:layout_alignBottom="@+id/r1"
            android:layout_alignParentRight="true" style="@android:style/Widget.Button.Inset"/>
    
```

```

        <EditText android:background="@null" android:layout_height="wrap_content"
        android:layout_width="wrap_content" android:inputType="textPassword"
        android:maxLength="40" android:hint="Password" android:ems="10"
        android:id="@+id/password" android:layout_alignParentTop="true"
        android:layout_alignBottom="@+id/r1" android:singleLine="true" android:maxLines="1"
        android:focusableInTouchMode="true" android:focusable="true"
        android:layout_toLeftOf="@+id/show_hide" android:layout_alignParentLeft="true"/>

    </RelativeLayout>

    <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:id="@+id/login" android:layout_alignParentTop="true"
    android:layout_alignParentRight="true" android:layout_alignParentLeft="true"
    android:textSize="20sp" android:onClick="action" android:text="Log in"/>

    <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:layout_alignLeft="@+id/r1" android:id="@+id/signin"
    android:layout_below="@+id/r1" android:layout_alignRight="@+id/r1"
    android:layout_marginTop="10dp" android:textSize="20sp" android:onClick="action"
    android:text="Continue.."/>

</RelativeLayout>

```

Welcome.xml

```

<?xml version="1.0"?>

    <RelativeLayout android:background="#999999" android:layout_height="fill_parent"
    android:layout_width="fill_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

        <ImageButton android:layout_height="50dp" android:layout_width="50dp"
        android:src="@drawable/ic_launcher" android:layout_alignParentTop="true"
        android:layout_alignParentLeft="true" android:id="@+id/w_image"/>

        <TextView android:background="#444444" android:layout_height="wrap_content"
        android:layout_width="wrap_content" android:layout_alignParentTop="true"
        android:id="@+id/w_welcome" android:textAppearance="?android:attr/textAppearanceLarge"
        android:gravity="center" android:text="Welcome Mohsin"
        android:layout_toRightOf="@+id/w_image" android:layout_alignParentRight="true"
        android:layout_alignBottom="@+id/w_image"/>

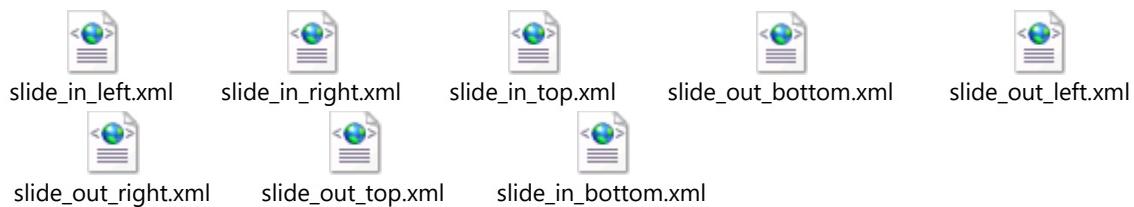
    </RelativeLayout>

```

Drawable FOLDER



anim FOLDER



Android manifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.manju.myapplication">
    <uses-permission android:name="android.permission.INTERNET" />
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity
            android:name=".MainActivity"
            android:label="@string/app_name"
            android:theme="@style/AppTheme.NoActionBar">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
```

```

        <category android:name="android.intent.category.LAUNCHER" />
    </intent-filter>
</activity>

<activity android:name="com.example.manju.myapplication.Login"/>

<activity android:name="com.example.manju.myapplication.Signin"/>

<activity android:name="com.example.manju.myapplication.Welcome"/>

</application>

</manifest>

```

- Google map directions

MainActivity.java

```

import java.io.BufferedReader;
import java.io.IOException;
import java.io.InputStream;
import java.io.InputStreamReader;
import java.net.HttpURLConnection;
import java.net.URL;
import java.util.ArrayList;
import java.util.HashMap;
import java.util.List;

import org.json.JSONObject;

import android.graphics.Color;
import android.os.AsyncTask;
import android.os.Bundle;
import android.support.v4.app.FragmentActivity;
import android.util.Log;
import android.view.Menu;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.RadioGroup.OnCheckedChangeListener;
import android.widget.Toast;

import com.google.android.gms.maps.GoogleMap;

```

```

import com.google.android.gms.maps.GoogleMap.OnMapClickListener;
import com.google.android.gms.maps.SupportMapFragment;
import com.google.android.gms.maps.model.BitmapDescriptorFactory;
import com.google.android.gms.maps.model.LatLng;
import com.google.android.gms.maps.model.MarkerOptions;
import com.google.android.gms.maps.model.PolylineOptions;

public class MainActivity extends FragmentActivity {

    GoogleMap map;
    RadioButton rbDriving;
    RadioButton rbBiCycling;
    RadioButton rbWalking;
    RadioGroup rgModes;
    ArrayList<LatLng> markerPoints;
    int mMode=0;
    final int MODE_DRIVING=0;
    final int MODE_BICYCLING=1;
    final int MODE_WALKING=2;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Getting reference to rb_driving
        rbDriving = (RadioButton) findViewById(R.id.rb_driving);

        // Getting reference to rb_bicylcing
        rbBiCycling = (RadioButton) findViewById(R.id.rb_bicycling);

        // Getting reference to rb_walking
        rbWalking = (RadioButton) findViewById(R.id.rb_walking);

        // Getting Reference to rg_modes
        rgModes = (RadioGroup) findViewById(R.id.rg_modes);

        rgModes.setOnCheckedChangeListener(new OnCheckedChangeListener() {

            @Override
            public void onCheckedChanged(RadioGroup group, int checkedId) {

                // Checks, whether start and end locations are captured
                if(markerPoints.size() >= 2){

```

```

Latlng origin = markerPoints.get(0);
Latlng dest = markerPoints.get(1);

// Getting URL to the Google Directions API
String url = getDirectionsUrl(origin, dest);

DownloadTask downloadTask = new DownloadTask();

// Start downloading json data from Google Directions API
downloadTask.execute(url);
}

}

});

// Initializing
markerPoints = new ArrayList<Latlng>();

// Getting reference to SupportMapFragment of the activity_main
SupportMapFragment fm =
(SupportMapFragment) getSupportFragmentManager().findFragmentById(R.id.map);

// Getting Map for the SupportMapFragment
map = fm.getMap();

// Enable MyLocation Button in the Map
map.setMyLocationEnabled(true);

// Setting onclick event listener for the map
map.setOnMapClickListener(new OnMapClickListener() {

    @Override
    public void onMapClick(Latlng point) {

        // Already two locations
        if(markerPoints.size()>1){
            markerPoints.clear();
            map.clear();
        }

        // Adding new item to the ArrayList
        markerPoints.add(point);

        // Draws Start and Stop markers on the Google Map
        drawStartStopMarkers();
    }
});

```

```

    // Checks, whether start and end locations are captured
    if(markerPoints.size() >= 2){
        LatLng origin = markerPoints.get(0);
        LatLng dest = markerPoints.get(1);

        // Getting URL to the Google Directions API
        String url = getDirectionsUrl(origin, dest);

        DownloadTask downloadTask = new DownloadTask();

        // Start downloading json data from Google Directions API
        downloadTask.execute(url);
    }
}

// Drawing Start and Stop locations
private void drawStartStopMarkers(){

    for(int i=0;i<markerPoints.size();i++){

        // Creating MarkerOptions
        MarkerOptions options = new MarkerOptions();

        // Setting the position of the marker
        options.position(markerPoints.get(i) );

        /**
         * For the start location, the color of marker is GREEN and
         * for the end location, the color of marker is RED.
         */
        if(i==0){

options.icon(BitmapDescriptorFactory.defaultMarker(BitmapDescriptorFactory.HUE_GREEN))
;

} else if(i==1){

options.icon(BitmapDescriptorFactory.defaultMarker(BitmapDescriptorFactory.HUE_RED));
}

        // Add new marker to the Google Map Android API V2
        map.addMarker(options);
    }
}

```

```

        }

    }

private String getDirectionsUrl(LatLng origin,LatLng dest){

    // Origin of route
    String str_origin = "origin=" +origin.latitude+"," +origin.longitude;

    // Destination of route
    String str_dest = "destination=" +dest.latitude+"," +dest.longitude;

    // Sensor enabled
    String sensor = "sensor=false";

    // Travelling Mode
    String mode = "mode=driving";

    if(rbDriving.isChecked()) {
        mode = "mode=driving";
        mMode = 0 ;
    }else if(rbBiCycling.isChecked()) {
        mode = "mode=bicycling";
        mMode = 1;
    }else if(rbWalking.isChecked()) {
        mode = "mode=walking";
        mMode = 2;
    }

    // Building the parameters to the web service
    String parameters = str_origin+"&" +str_dest+"&" +sensor+"&" +mode;

    // Output format
    String output = "json";

    // Building the url to the web service
    String url =
"https://maps.googleapis.com/maps/api/directions/+output+"?" +parameters;

    return url;
}

/** A method to download json data from url */
private String downloadUrl(String strUrl) throws IOException{
    String data = "";
    InputStream iStream = null;
}

```

```

HttpURLConnection urlConnection = null;
try{
    URL url = new URL(strUrl);

    // Creating an http connection to communicate with url
    urlConnection = (HttpURLConnection) url.openConnection();

    // Connecting to url
    urlConnection.connect();

    // Reading data from url
    iStream = urlConnection.getInputStream();

    BufferedReader br = new BufferedReader(new InputStreamReader(iStream));

    StringBuffer sb = new StringBuffer();

    String line = "";
    while( ( line = br.readLine()) != null){
        sb.append(line);
    }

    data = sb.toString();

    br.close();

} catch(Exception e){
    Log.d("Exception while downloading url", e.toString());
} finally{
    iStream.close();
    urlConnection.disconnect();
}
return data;
}

// Fetches data from url passed
private class DownloadTask extends AsyncTask<String, Void, String>{

    // Downloading data in non-ui thread
    @Override
    protected String doInBackground(String... url) {

        // For storing data from web service
        String data = "";

```

```

try{
    // Fetching the data from web service
    data = downloadUrl(url[0]);
} catch(Exception e){
    Log.d("Background Task",e.toString());
}
return data;
}

// Executes in UI thread, after the execution of
// doInBackground()
@Override
protected void onPostExecute(String result) {
    super.onPostExecute(result);

    ParserTask parserTask = new ParserTask();

    // Invokes the thread for parsing the JSON data
    parserTask.execute(result);
}
}

/** A class to parse the Google Places in JSON format */
private class ParserTask extends AsyncTask<String, Integer,
List<List<HashMap<String, String>>> >{

    // Parsing the data in non-ui thread
@Override
protected List<List<HashMap<String, String>>> doInBackground(String...
jsonData) {

    JSONObject jObject;
    List<List<HashMap<String, String>>> routes = null;

    try{
        jObject = new JSONObject(jsonData[0]);
        DirectionsJSONParser parser = new DirectionsJSONParser();

        // Starts parsing data
        routes = parser.parse(jObject);
    } catch(Exception e){
        e.printStackTrace();
    }
}

```

```

    return routes;
}

// Executes in UI thread, after the parsing process
@Override
protected void onPostExecute(List<List<HashMap<String, String>>> result) {
    ArrayList<LatLng> points = null;
    PolylineOptions lineOptions = null;
    MarkerOptions markerOptions = new MarkerOptions();

    // Traversing through all the routes
    for(int i=0;i<result.size();i++){
        points = new ArrayList<LatLng>();
        lineOptions = new PolylineOptions();

        // Fetching i-th route
        List<HashMap<String, String>> path = result.get(i);

        // Fetching all the points in i-th route
        for(int j=0;j<path.size();j++){
            HashMap<String, String> point = path.get(j);

            double lat = Double.parseDouble(point.get("lat"));
            double lng = Double.parseDouble(point.get("lng"));
            LatLng position = new LatLng(lat, lng);

            points.add(position);
        }

        // Adding all the points in the route to LineOptions
        lineOptions.addAll(points);
        lineOptions.width(2);

        // Changing the color polyline according to the mode
        if(mMode==MODE_DRIVING)
            lineOptions.color(Color.RED);
        else if(mMode==MODE_BICYCLING)
            lineOptions.color(Color.GREEN);
        else if(mMode==MODE_WALKING)
            lineOptions.color(Color.BLUE);
    }

    if(result.size()<1){
        Toast.makeText(getApplicationContext(), "No Points",

```

```

        Toast.LENGTH_SHORT).show();
        return;
    }

    // Drawing polyline in the Google Map for the i-th route
    map.addPolyline(lineOptions);
}
}

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    // Inflate the menu; this adds items to the action bar if it is present.
    getMenuInflater().inflate(R.menu.menu_main, menu);
    return true;
}
}

```

DirectionsJSONParser.java

```

import java.util.ArrayList;
import java.util.HashMap;
import java.util.List;

import org.json.JSONArray;
import org.json.JSONException;
import org.json.JSONObject;

import com.google.android.gms.maps.model.LatLng;

public class DirectionsJSONParser {

    /** Receives a JSONObject and returns a list of lists containing latitude and
longitude */
    public List<List<HashMap<String, String>>> parse(JSONObject jobject) {

        List<List<HashMap<String, String>>> routes = new
ArrayList<List<HashMap<String, String>>>();
        JSONArray jRoutes = null;
        JSONArray jLegs = null;
        JSONArray jSteps = null;

        try {

```

```

jRoutes = jObject.getJSONArray("routes") ;

/** Traversing all routes */
for(int i=0;i<jRoutes.length();i++) {
    jLegs = ( (JSONObject)jRoutes.get(i)).getJSONArray("legs");
    List path = new ArrayList<HashMap<String, String>>();

    /** Traversing all legs */
    for(int j=0;j<jLegs.length();j++) {
        jSteps = ( (JSONObject)jLegs.get(j)).getJSONArray("steps");

        /** Traversing all steps */
        for(int k=0;k<jSteps.length();k++) {
            String polyline = "";
            polyline =
(String)((JSONObject)((JSONObject)jSteps.get(k)).get("polyline")).get("points");
            List<LatLng> list = decodePoly(polyline);

            /** Traversing all points */
            for(int l=0;l<list.size();l++) {
                HashMap<String, String> hm = new HashMap<String,
String>();
                hm.put("lat",
Double.toString(((LatLng)list.get(l)).latitude) );
                hm.put("lng",
Double.toString(((LatLng)list.get(l)).longitude) );
                path.add(hm);
            }
        }
        routes.add(path);
    }
}

} catch (JSONException e) {
    e.printStackTrace();
} catch (Exception e) {
}
return routes;
}

/**
 * Method to decode polyline points
 * Courtesy : jeffreysambells.com/2010/05/27/decoding-polylines-from-google-maps-
direction-api-with-java
 */

```

```

private List<LatLng> decodePoly(String encoded) {

    List<LatLng> poly = new ArrayList<LatLng>();
    int index = 0, len = encoded.length();
    int lat = 0, lng = 0;

    while (index < len) {
        int b, shift = 0, result = 0;
        do {
            b = encoded.charAt(index++) - 63;
            result |= (b & 0x1f) << shift;
            shift += 5;
        } while (b >= 0x20);
        int dlat = ((result & 1) != 0 ? ~ (result >> 1) : (result >> 1));
        lat += dlat;

        shift = 0;
        result = 0;
        do {
            b = encoded.charAt(index++) - 63;
            result |= (b & 0x1f) << shift;
            shift += 5;
        } while (b >= 0x20);
        int dlng = ((result & 1) != 0 ? ~ (result >> 1) : (result >> 1));
        lng += dlng;

        LatLng p = new LatLng(((double) lat / 1E5),
                           ((double) lng / 1E5));
        poly.add(p);
    }
    return poly;
}
}

```

activity_main.xml

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity" >

    <RadioGroup

```

```

        android:id="@+id/rg_modes"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentBottom="true"
        android:orientation="horizontal" >

        <RadioButton android:id="@+id/rb_driving"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="@string/str_rb_driving"
            android:checked="true" />

        <RadioButton android:id="@+id/rb_bicycling"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="@string/str_rb_bicycling" />

        <RadioButton android:id="@+id/rb_walking"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="@string/str_rb_walking" />

    </RadioGroup>

    <fragment
        android:id="@+id/map"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_above="@id/rg_modes"
        class="com.google.android.gms.maps.SupportMapFragment" />

</RelativeLayout>

```

Android Manifest.xml

```

<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.manju.myapplication">

    <permission
        android:name="com.example.manju.myapplication.permission.MAPS_RECEIVE"
        android:protectionLevel="signature" />

    <uses-permission

```

```

    android:name="com.example.manju.myapplication.permission.MAPS_RECEIVE" />

    <uses-permission android:name="android.permission.INTERNET"/>
    <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>
    <uses-permission

    android:name="com.google.android.providers.gsf.permission.READ_GSERVICES"/>
    <uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION"/>
    <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"/>

<application
    android:allowBackup="true"
    android:icon="@mipmap/ic_launcher"
    android:label="@string/app_name"
    android:supportsRtl="true"
    android:theme="@style/AppTheme">
    <activity
        android:name=".MainActivity"
        android:label="@string/app_name"
        android:theme="@style/AppTheme.NoActionBar">
        <intent-filter>
            <action android:name="android.intent.action.MAIN" />

            <category android:name="android.intent.category.LAUNCHER" />
        </intent-filter>
    </activity>

    <meta-data
        android:name="com.google.android.maps.v2.API_KEY"
        android:value="AIzaSyChFgoCG01fzZeXxxEvL-f7yElcekl3vwA"/>

</application>

</manifest>

```

String.xml

```

<string name="hello_world">Hello world!</string>
<string name="str_rb_driving">Driving</string>
<string name="str_rb_bicycling">BiCycling</string>
<string name="str_rb_walking">Walking</string>

```

- **Class Time Table**

MainActivity.java

```
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.content.Intent;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    public void onButtonClick(View v) {
        if (v.getId() == R.id.Bdisplay)

        {
            Intent i = new Intent(MainActivity.this, ListBatchesActivity.class);
            startActivity(i);
        }
    }
}
```

List batches Activity

```
import android.app.Activity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.ListView;

public class ListBatchesActivity extends Activity {

    ListView listBatches;
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.listbatches);
    }
}
```

```

        }

    @Override
    public void onStart() {
        super.onStart();
        listBatches = (ListView) this.findViewById(R.id.listBatches);
        BatchesAdapter adapter = new BatchesAdapter(this);
        listBatches.setAdapter(adapter);
    }

    public void addBatch(View v) {
        Intent intent = new Intent(this, AddBatchActivity.class);
        startActivity(intent);
    }

}

```

AddBatchActivity

```

import java.util.Calendar;
import android.app.Activity;
import android.app.DatePickerDialog;
import android.app.Dialog;
import android.app.TimePickerDialog;
import android.os.Bundle;
import android.view.View;
import android.widget.DatePicker;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.TimePicker;
import android.widget.Toast;

public class AddBatchActivity extends Activity {
    private static final int DATE_DIALOG = 1;
    private static final int TIME_DIALOG = 2;
    private int day, month, year, hours, mins;
    private TextView textStartDate, textStartTime;
    private EditText
editBatchcode,editCourse,editPeriod,editClasses,editClassesPerWeek, editRemarks;

    @Override
    public void onCreate(Bundle savedInstanceState) {

```

```

super.onCreate(savedInstanceState);
setContentView(R.layout.addbatch);

textStartDate = (TextView) this.findViewById(R.id.textStartDate);
textStartTime = (TextView) this.findViewById(R.id.textStartTime);

editBatchcode = (EditText) this.findViewById(R.id.editBatchCode) ;
editCourse = (EditText) this.findViewById(R.id.editCourse) ;
editPeriod = (EditText) this.findViewById(R.id.editPeriod) ;
editClasses = (EditText) this.findViewById(R.id.editClasses) ;
editClassesPerWeek = (EditText) this.findViewById(R.id.editClassesPerWeek) ;
editRemarks = (EditText) this.findViewById(R.id.editRemarks) ;

setDateToSysdate();
updateDateDisplay();

}

private void setDateToSysdate() {
    Calendar c = Calendar.getInstance();
    day = c.get(Calendar.DAY_OF_MONTH);
    month = c.get(Calendar.MONTH);
    year = c.get(Calendar.YEAR);
}

public void addBatch(View v) {
    boolean done = Database.addBatch(this,
            editBatchcode.getText().toString(),
            editCourse.getText().toString(),
            textStartDate.getText().toString(),
            textStartTime.getText().toString(),
            editClasses.getText().toString(),
            editPeriod.getText().toString(),
            editClassesPerWeek.getText().toString(),
            editRemarks.getText().toString());

    if ( done )
        Toast.makeText(this,"Added batch successfully",
        Toast.LENGTH_LONG).show();
    else
        Toast.makeText(this,"Sorry! Could not add batch!",
        Toast.LENGTH_LONG).show();
}

```

```

public void showDatePicker(View v) {
    showDialog(DATE_DIALOG);
}

public void showTimePicker(View v) {
    showDialog(TIME_DIALOG);
}

@Override
protected Dialog onCreateDialog(int id) {
    super.onCreateDialog(id);

    switch (id) {
        case DATE_DIALOG:
            return new DatePickerDialog(this, dateSetListener, year, month, day);
        case TIME_DIALOG:
            return new TimePickerDialog(this, timeSetListener, hours, mins, false);
    }
    return null;
}

private DatePickerDialog.OnDateSetListener dateSetListener = new
DatePickerDialog.OnDateSetListener() {

    public void onDateSet(DatePicker view, int pYear, int pMonth, int pDay) {
        year = pYear;
        month = pMonth;
        day = pDay;
        updateDateDisplay();
    }
};

private TimePickerDialog.OnTimeSetListener timeSetListener =
new TimePickerDialog.OnTimeSetListener() {

    @Override
    public void onTimeSet(TimePicker arg0, int pHours, int pMins) {
        hours = pHours;
        mins = pMins;
        updateTimeDisplay();
    }
}

```

```

    };

private void updateDateDisplay() {
    // Month is 0 based so add 1
    textStartDate.setText(String.format("%04d-%02d-%02d", year, month + 1, day));
}

private void updateTimeDisplay() {
    // Month is 0 based so add 1
    textStartTime.setText(String.format("%02d:%02d", hours, mins));
}

}

```

AddClassActivity

```

import java.util.Calendar;
import android.app.Activity;
import android.app.DatePickerDialog;
import android.app.Dialog;
import android.app.TimePickerDialog;
import android.os.Bundle;
import android.view.View;
import android.widget.CheckBox;
import android.widget.DatePicker;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.TimePicker;
import android.widget.Toast;

public class AddClassActivity extends Activity {
    private static final int DATE_DIALOG = 1;
    private static final int TIME_DIALOG = 2;
    private int day, month, year, hours, mins;
    private TextView textClassDate, textClassTime, textBatchCode;
    private EditText editPeriod, editRemarks, editTopics;
    private CheckBox chkAdjust;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

```

```

setContentView(R.layout.addclass);

textBatchCode = (TextView) this.findViewById(R.id.textBatchCode);
textClassDate = (TextView) this.findViewById(R.id.textClassDate);
textClassTime = (TextView) this.findViewById(R.id.textClassTime);

editPeriod = (EditText) this.findViewById(R.id.editPeriod) ;
editRemarks = (EditText) this.findViewById(R.id.editRemarks) ;
editTopics = (EditText) this.findViewById(R.id.editTopics) ;

chkAdjust = (CheckBox) this.findViewById(R.id.chkAdjust);

textBatchCode.setText( getIntent().getStringExtra("batchcode") );
 setDateToSysdate();
 updateDateDisplay();
}

private void setDateToSysdate() {
    Calendar c = Calendar.getInstance();
    day = c.get(Calendar.DAY_OF_MONTH);
    month = c.get(Calendar.MONTH);
    year = c.get(Calendar.YEAR);
}

public void addClass(View v) {
    boolean done = Database.addClass(this,
        textBatchCode.getText().toString(),
        textClassDate.getText().toString(),
        textClassTime.getText().toString(),
        editPeriod.getText().toString(),
        editTopics.getText().toString(),
        editRemarks.getText().toString(),
        chkAdjust.isChecked());

    if ( done )
        Toast.makeText(this,"Added Class Successfully",
Toast.LENGTH_LONG).show();
    else
        Toast.makeText(this,"Sorry! Could not add class!",
Toast.LENGTH_LONG).show();
}

public void showDatePicker(View v) {

```

```

        showDialog(DATE_DIALOG) ;
    }

public void showTimePicker(View v) {
    showDialog(TIME_DIALOG) ;
}

@Override
protected Dialog onCreateDialog(int id) {
    super.onCreateDialog(id);

    switch (id) {
        case DATE_DIALOG:
            return new DatePickerDialog(this, dateSetListener, year, month, day);
        case TIME_DIALOG:
            return new TimePickerDialog(this, timeSetListener, hours,mins, false);
    }
    return null;
}

private DatePickerDialog.OnDateSetListener dateSetListener = new
DatePickerDialog.OnDateSetListener() {

    public void onDateSet(DatePicker view, int pYear, int pMonth, int pDay) {
        year = pYear;
        month = pMonth;
        day = pDay;
        updateDateDisplay();
    }
};

private TimePickerDialog.OnTimeSetListener timeSetListener =
new TimePickerDialog.OnTimeSetListener() {

    @Override
    public void onTimeSet(TimePicker arg0, int pHours, int pMins) {
        hours = pHours;
        mins = pMins;
        updateTimeDisplay();
    }
};

```

```

private void updateDateDisplay() {
    // Month is 0 based so add 1
    textClassDate.setText(String.format("%04d-%02d-%02d", year, month + 1,day));
}

private void updateTimeDisplay() {
    // Month is 0 based so add 1
    textClassTime.setText(String.format("%02d:%02d", hours,mins));
}
}

```

Batch

```

public class Batch {

    private String code,course,startdate,
enddate,starttime,classes,period,classesperweek,remarks;

    public String getCode() {
        return code;
    }

    public void setCode(String code) {
        this.code = code;
    }

    public String getCourse() {
        return course;
    }

    public void setCourse(String course) {
        this.course = course;
    }

    public String getStartdate() {
        return startdate;
    }

    public void setStartdate(String startdate) {
        this.startdate = startdate;
    }
}

```

```

public String getEnddate() {
    return enddate;
}

public void setEnddate(String enddate) {
    this.enddate = enddate;
}

public String getStarttime() {
    return starttime;
}

public void setStarttime(String starttime) {
    this.starttime = starttime;
}

public String getClasses() {
    return classes;
}

public void setClasses(String classes) {
    this.classes = classes;
}

public String getPeriod() {
    return period;
}

public void setPeriod(String period) {
    this.period = period;
}

public String getClassesperweek() {
    return classesperweek;
}

public void setClassesperweek(String classesperweek) {
    this.classesperweek = classesperweek;
}

public String getRemarks() {
    return remarks;
}

```

```

    public void setRemarks(String remarks) {
        this.remarks = remarks;
    }

}

```

BatchesAdapter

```

import java.util.ArrayList;

import android.content.Context;
import android.content.Intent;
import android.view.LayoutInflater;
import android.view.View;
import android.view.View.OnClickListener;
import android.view.ViewGroup;
import android.widget.BaseAdapter;
import android.widget.Button;
import android.widget.TextView;

public class BatchesAdapter extends BaseAdapter {
    private LayoutInflater inflater;
    private ArrayList<Batch> batches;

    public BatchesAdapter(Context ctx) {
        inflater = LayoutInflater.from(ctx);
        batches = Database.getBatches(ctx);
    }

    @Override
    public int getCount() {
        return batches.size();
    }

    @Override
    public Object getItem(int pos) {
        return batches.get(pos);
    }

    @Override
    public long getItemId(int position) {

```

```

    return 0;
}

@Override
public View getView(int position, View convertView, ViewGroup parent) {
    if (convertView == null) {
        convertView = inflater.inflate(R.layout.batch, null);
        Button btnClasses = (Button) convertView.findViewById(R.id.btnClasses);
        Button btnUpdate = (Button) convertView.findViewById(R.id.btnUpdate);
        Button btnAddClass = (Button) convertView.findViewById(R.id.btnAddClass);

        final Batch batch = batches.get(position);

        TextView textCode = (TextView) convertView.findViewById(R.id.textCode);
        textCode.setText( batch.getCode() );

        TextView textCourse = (TextView)
convertView.findViewById(R.id.textCourse);
        textCourse.setText( batch.getCourse() );

        TextView textStartDate = (TextView)
convertView.findViewById(R.id.textStartDate);
        textStartDate.setText(batch.getStartdate());

        TextView textEndDate = (TextView)
convertView.findViewById(R.id.textEndDate);
        textEndDate.setText(batch.getEnddate());

        btnClasses.setOnClickListener(new OnClickListener() {
            @Override
            public void onClick(View view) {
                Context context = view.getContext();
                Intent intent = new Intent(context, ListClassesActivity.class);
                intent.putExtra("batchcode",batch.getCode());
                context.startActivity(intent);
            }
        });
    }

    btnAddClass.setOnClickListener(new OnClickListener() {
        @Override
        public void onClick(View view) {
            Context context = view.getContext();
            Intent intent = new Intent(context, AddClassActivity.class);

```

```

        intent.putExtra("batchcode",batch.getCode());
        context.startActivity(intent);
    }
}) ;

btnUpdate.setOnClickListener(new OnClickListener() {
    @Override
    public void onClick(View view) {

        Context context = view.getContext();
        Intent intent = new Intent(context, UpdateBatchActivity.class);
        intent.putExtra("batchcode",batch.getCode());
        context.startActivity(intent);
    }
});
return convertView;
}
}
}

```

Class

```

public class Class {

    private String classno, classId, classDate, classTime, period, topics, remarks,
batchCode;

    public String getBatchCode() {
        return batchCode;
    }

    public void setBatchCode(String batchCode) {
        this.batchCode = batchCode;
    }

    public String getClassId() {
        return classId;
    }

    public void setClassId(String classId) {

```

```

    this.classId = classId;
}

public String getClassno() {
    return classno;
}

public void setClassno(String classno) {
    this.classno = classno;
}

public String getClassDate() {
    return classDate;
}

public void setClassDate(String classDate) {
    this.classDate = classDate;
}

public String getClassTime() {
    return classTime;
}

public void setClassTime(String classTime) {
    this.classTime = classTime;
}

public String getPeriod() {
    return period;
}

public void setPeriod(String period) {
    this.period = period;
}

public String getTopics() {
    return topics;
}

public void setTopics(String topics) {
    this.topics = topics;
}

public String getRemarks() {

```

```

    return remarks;
}

public void setRemarks(String remarks) {
    this.remarks = remarks;
}

}

```

ClassSchedulerActivity

```

import android.app.Activity;
import android.database.sqlite.SQLiteDatabase;
import android.os.Bundle;

public class ClassSchedulerActivity extends Activity {
    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);
        DBHelper dbhelper = new DBHelper(this);
        SQLiteDatabase db = dbhelper.getWritableDatabase();
        db.close();

    }
}

```

Database

```

import java.util.ArrayList;
import java.util.Calendar;

import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.util.Log;

public class Database {
    public static final String BATCHES_TABLE_NAME = "batches";
    public static final String BATCHES_ID = "_id";

```

```

public static final String BATCHES_BATCHCODE = "batchcode";
public static final String BATCHES_COURSE = "course";
public static final String BATCHES_STARTDATE = "startdate";
public static final String BATCHES_STARTTIME = "starttime";
public static final String BATCHES_CLASSES = "classes";
public static final String BATCHES_PERIOD = "period";
public static final String BATCHES_CLASSESPERWEEK = "classespерweek";
public static final String BATCHES_REMARKS = "remarks";

public static final String CLASSES_TABLE_NAME = "classes";
public static final String CLASSES_CLASSES_ID = "_id";

public static final String CLASSES_BATCHCODE = "batchcode";
public static final String CLASSES_CLASSDATE = "classdate";
public static final String CLASSES_CLASSTIME = "classtime";
public static final String CLASSES_CLASSPERIOD = "period";
public static final String CLASSES_TOPICS = "topics";
public static final String CLASSES_REMARKS = "remarks";

public static Batch cursorToBatch(Cursor batches) {

    Batch batch = new Batch();
    batch.setCode(batches.getString(batches
        .getColumnIndex(Database.BATCHES_BATCHCODE)));
    batch.setCourse(batches.getString(batches
        .getColumnIndex(Database.BATCHES_COURSE)));
    batch.setStartdate(batches.getString(batches
        .getColumnIndex(Database.BATCHES_STARTDATE)));
    batch.setStarttime(batches.getString(batches
        .getColumnIndex(Database.BATCHES_STARTTIME)));
    batch.setClasses(batches.getString(batches
        .getColumnIndex(Database.BATCHES_CLASSES)));
    batch.setClassesperweek(batches.getString(batches
        .getColumnIndex(Database.BATCHES_CLASSESPERWEEK)));
    batch.setPeriod(batches.getString(batches
        .getColumnIndex(Database.BATCHES_PERIOD)));
    batch.setRemarks(batches.getString(batches
        .getColumnIndex(Database.BATCHES_REMARKS)));
    return batch;
}

public static Class cursorToClass(Cursor classes) {
    Class cls = new Class();
    cls.setClassId( classes.getString(

```

```

        classes.getColumnIndex(Database.CLASSES_CLASSES_ID));
        cls.setBatchCode( classes.getString(
        classes.getColumnIndex(Database.CLASSES_BATCHCODE));
        cls.setClassDate( classes.getString(
        classes.getColumnIndex(Database.CLASSES_CLASSDATE));
        cls.setClassTime( classes.getString(
        classes.getColumnIndex(Database.CLASSES_CLASSTIME));
        cls.setPeriod( classes.getString(
        classes.getColumnIndex(Database.CLASSES_CLASSPERIOD));
        cls.setTopics( classes.getString(
        classes.getColumnIndex(Database.CLASSES_TOPICS));
        cls.setRemarks( classes.getString(
        classes.getColumnIndex(Database.CLASSES_REMARKS));
        return cls;
    }
}

public static boolean addClass(Context context, String batchCode, String
classDate, String classTime, String period, String topics, String remarks, boolean
adjust) {
    DBHelper dbhelper = null;
    SQLiteDatabase db = null;
    try {
        dbhelper = new DBHelper(context);
        db = dbhelper.getWritableDatabase();
        db.beginTransaction();

        if ( adjust ) {
            // delete last class for the batch
            boolean deleted = deleteLastClass(db,batchCode);
            if ( !deleted ) {
                db.endTransaction();
                return false;
            }
        }

        // add new class with the given details

        ContentValues values = new ContentValues();
        values.put(Database.CLASSES_BATCHCODE, batchCode);
        values.put(Database.CLASSES_CLASSDATE, classDate);
        values.put(Database.CLASSES_CLASSTIME, classTime);
        values.put(Database.CLASSES_CLASSPERIOD, period);
        values.put(Database.CLASSES_REMARKS, remarks);
    }
}

```

```

values.put(Database.CLASSES_TOPICS,topics);

long rowid = db.insert(Database.CLASSES_TABLE_NAME, null,values);

if ( rowid >=0 ) {
    db.setTransactionSuccessful();
    db.endTransaction();
    return true;
}
else {
    db.endTransaction();
    return false;
}
}

catch(Exception ex) {
    Log.d("CS", "Error in addClass -->" + ex.getMessage());
    return false;
}
finally {
    if (db != null && db.isOpen()) {
        db.close();
    }
}

}

public static boolean deleteLastClass(SQLiteDatabase db, String batchcode) {
try {
    // find out classid for last class and then delete it
    boolean done = false;
    Cursor lastClass = db.query(Database.CLASSES_TABLE_NAME,
null,Database.CLASSES_BATCHCODE + " = ?",
        new String[] { batchcode},
        null, null, Database.CLASSES_CLASSDATE + " desc " , "1");

    String classid = null;

    if ( lastClass.moveToFirst() ) {
        classid = lastClass.getString( lastClass.getColumnIndex(
Database.CLASSES_CLASSES_ID));
        int rows =
db.delete(Database.CLASSES_TABLE_NAME,Database.CLASSES_CLASSES_ID + " = ?",
        new String[] { classid} );
        done = rows == 1;
    }
}
}

```

```

        }

        lastClass.close();

        return done;
    }

    catch (Exception ex) {
        Log.d("Account", "Error in deleteLastClass-->" + ex.getMessage());
        return false;
    }

} // deleteLastClass


public static String calendarToString(Calendar c) {
    return String.format("%04d-%02d-%02d", c.get(Calendar.YEAR),
c.get(Calendar.MONTH) + 1, c.get(Calendar.DAY_OF_MONTH));
}

public static boolean cancelClass(Context context, String batchCode, String
classid) {

    DBHelper dbhelper = null;
    SQLiteDatabase db = null;
    try {
        dbhelper = new DBHelper(context);
        db = dbhelper.getWritableDatabase();
        db.beginTransaction();

        int rows =
db.delete(Database.CLASSES_TABLE_NAME, Database.CLASSES_CLASSES_ID + " = ?",
        new String[] { classid} );
        if ( rows == 1)
        {
            // add a class after the last class
            if ( addAfterLastClass(db,batchCode) )
            {
                db.setTransactionSuccessful();
                db.endTransaction();
                return true;
            }
        }
    }

    db.endTransaction();
    return false;
}

```

```

        catch (Exception ex) {
            Log.d("CS", "Error in cancelClass-->" + ex.getMessage());
            return false;
        }
    finally {
        if (db != null && db.isOpen()) {
            db.close();
        }
    }
}

public static boolean addAfterLastClass(SQLiteDatabase db, String batchcode) {
    try {
        // find out last class date
        boolean done = false;
        Batch batch = null;

        Cursor lastClass = db.query(Database.CLASSES_TABLE_NAME,
null, Database.CLASSES_BATCHCODE + " = ?",
        new String[] { batchcode },
        null, null, Database.CLASSES_CLASSDATE + " desc " , "1");

        String classdate = null;
        if ( lastClass.moveToFirst() ) {
            classdate = lastClass.getString(lastClass.getColumnIndex(
Database.CLASSES_CLASSDATE));
            // get details of the batch
            batch = getBatch(db,batchcode);
            // find out next date after the last class
            Calendar c = getCalendar(classdate);

            int classesperweek = Integer.parseInt( batch.getClassesperweek());
            c.add( Calendar.DAY_OF_MONTH,1);

            int dow = getDayOfWeek(c.get(Calendar.DAY_OF_WEEK));

            if ( dow == 7 && classesperweek == 6) {
                c.add( Calendar.DAY_OF_MONTH,1); // add one more day
            }
            else
            if ( dow == 6 && classesperweek == 5)
                c.add( Calendar.DAY_OF_MONTH,2); // add two more day
    }
}

```

```

    // insert with new data

    lastClass.close();
    ContentValues values = new ContentValues();
    values.put(Database.CLASSES_BATCHCODE, batch.getCode());
    values.put(Database.CLASSES_CLASSDATE, calendarToString(c));
    values.put(Database.CLASSES_CLASSTIME, batch.getStarttime());
    values.put(Database.CLASSES_CLASSPERIOD, batch.getPeriod());
    values.put(Database.CLASSES_REMARKS, "");
    values.put(Database.CLASSES_TOPICS, "");

    long rowid = db.insert(Database.CLASSES_TABLE_NAME, null, values);
    return rowid >= 0;
}

else
    return false;
}

catch (Exception ex) {
    Log.d("Account", "Error in deleteLastClass-->" + ex.getMessage());
    return false;
}
}

} // deleteLastClass

public static boolean deleteClass(Context context, String classid) {
    DBHelper dbhelper = null;
    SQLiteDatabase db = null;
    try {
        dbhelper = new DBHelper(context);
        db = dbhelper.getWritableDatabase();
        int rows =
db.delete(Database.CLASSES_TABLE_NAME, Database.CLASSES_CLASSES_ID + " = ?",
           new String[] { classid} );
        return rows == 1;
    }
    catch (Exception ex) {
        Log.d("CS", "Error in deleteClass-->" + ex.getMessage());
        return false;
    }
    finally {
        if (db != null && db.isOpen()) {
            db.close();
        }
    }
}

```

```

} // deleteClass

public static boolean addBatch(Context context, String batchcode,
                               String course, String startdate, String starttime,
String classes,
                               String period, String classesperweek, String
remarks) {

    DBHelper dbhelper = null;
    SQLiteDatabase db = null;
    try {
        dbhelper = new DBHelper(context);
        db = dbhelper.getWritableDatabase();
        db.beginTransaction();

        // execute insert command
        ContentValues values = new ContentValues();
        values.put(Database.BATCHES_BATCHCODE, batchcode);
        values.put(Database.BATCHES.Course, course);
        values.put(Database.BATCHES_STARTDATE, startdate);
        values.put(Database.BATCHES_STARTTIME, starttime);
        values.put(Database.BATCHES_CLASSES, classes);
        values.put(Database.BATCHES_PERIOD, period);
        values.put(Database.BATCHES_CLASSESPERWEEK, classesperweek);
        values.put(Database.BATCHES_REMARKS, remarks);

        long rowid = db.insert(Database.BATCHES_TABLE_NAME, null, values);
        Log.d("CS", "Inserted into BATCHES " + rowid);

        addClasses(db, batchcode, startdate, starttime, classes, period,
                  classesperweek);

        db.setTransactionSuccessful();
        db.endTransaction();
        return true;
    } catch (Exception ex) {
        Log.d("Account", "Error in addTransaction -->" + ex.getMessage());
        return false;
    } finally {
        if (db != null && db.isOpen()) {
            db.close();
        }
    }
} // addBatch

```

```

public static boolean updateBatch(Context context, String batchcode,
                                    String course, String starttime, String period,
                                    String remarks) {

    DBHelper dbhelper = null;
    SQLiteDatabase db = null;
    try {
        dbhelper = new DBHelper(context);
        db = dbhelper.getWritableDatabase();
        db.beginTransaction();

        // execute insert command
        ContentValues values = new ContentValues();
        values.put(Database.BATCHES_BATCHCODE, batchcode);
        values.put(Database.BATCHES.Course, course);
        values.put(Database.BATCHES_STARTTIME, starttime);
        values.put(Database.BATCHES_PERIOD, period);
        values.put(Database.BATCHES_REMARKS, remarks);

        int rows = db.update(Database.BATCHES_TABLE_NAME, values,
Database.BATCHES_BATCHCODE + " = ?",
new String[] { batchcode} );
        if ( rows == 1)
            db.setTransactionSuccessful();

        db.endTransaction();
        return true;
    } catch (Exception ex) {
        Log.d("Account", "Error in updateBatch-->" + ex.getMessage());
        return false;
    } finally {
        if (db != null && db.isOpen()) {
            db.close();
        }
    }
} // updateBatch

public static boolean updateClass(Context context, String classid, String
classTime, String period, String topics, String remarks) {

    DBHelper dbhelper = null;
    SQLiteDatabase db = null;

```

```

try {
    dbhelper = new DBHelper(context);
    db = dbhelper.getWritableDatabase();

    // execute insert command
    ContentValues values = new ContentValues();
    values.put(Database.CLASSES_CLASSTIME, classTime);
    values.put(Database.CLASSES_CLASSPERIOD, period);
    values.put(Database.CLASSES_TOPICS, topics);
    values.put(Database.CLASSES_REMARKS, remarks);

    int rows = db.update(Database.CLASSES_TABLE_NAME, values,
Database.CLASSES_ID + " = ?",
    new String[] { classid} );
    if ( rows == 1)
        return true;
    else
        return false;
} catch (Exception ex) {
    Log.d("Account", "Error in updateClass-->" + ex.getMessage());
    return false;
} finally {
    if (db != null && db.isOpen()) {
        db.close();
    }
}
} // updateBatch

public static boolean deleteBatch(Context context, String batchcode) {
    DBHelper dbhelper = null;
    SQLiteDatabase db = null;
    try {
        dbhelper = new DBHelper(context);
        db = dbhelper.getWritableDatabase();
        db.beginTransaction();

        int rows =
db.delete(Database.CLASSES_TABLE_NAME, Database.BATCHES_BATCHCODE + " = ?",
    new String[] { batchcode} );

        rows = db.delete(Database.BATCHES_TABLE_NAME, Database.BATCHES_BATCHCODE +
" = ?",

```

```

        new String[] { batchcode} );
    if ( rows == 1)
        db.setTransactionSuccessful();

    db.endTransaction();
    return true;
} catch (Exception ex) {
    Log.d("Account", "Error in deleteBatch-->" + ex.getMessage());
    return false;
} finally {
    if (db != null && db.isOpen()) {
        db.close();
    }
}
} // deleteBatch

private static int getDayOfWeek(int dow) {

    if (dow == 1)
        return 7;
    else
        return dow - 1;
}

public static void addClasses(SQLiteDatabase db, String batchcode,
                               String startdate, String starttime, String classes,
String period,
                               String classesperweek) throws Exception {
    try {

        // execute insert command
        ContentValues values = new ContentValues();
        values.put(Database.CLASSES_BATCHCODE, batchcode);
        values.put(Database.CLASSES_CLASSTIME, starttime);
        values.put(Database.CLASSES_CLASSPERIOD, period);
        values.put(Database.CLASSES_REMARKS, "");
        values.put(Database.CLASSES_TOPICS, "");

        String[] parts = startdate.split("-");
        int year = Integer.parseInt(parts[0]);
        int month = Integer.parseInt(parts[1]) - 1; // zero based month
        int day = Integer.parseInt(parts[2]);
    }
}

```

```

Calendar c = Calendar.getInstance();
c.set(year, month, day);

int noclasses = Integer.parseInt(classes);
int cpw = Integer.parseInt(classesperweek);

int classnumber = 1;

do {
    int dow = c.get(Calendar.DAY_OF_WEEK);

    if (getDayOfWeek(dow) <= cpw) {
        values.put(Database.CLASSES_CLASSDATE, String.format(
            "%04d-%02d-%02d", c.get(Calendar.YEAR),
            c.get(Calendar.MONTH) + 1,
            c.get(Calendar.DAY_OF_MONTH)));
    }

    long rowid = db.insert(Database.CLASSES_TABLE_NAME, null,
        values);
    Log.d("CS", "Inserted into CLASSES" + rowid);
    classnumber++;
}

c.add(Calendar.DAY_OF_MONTH, 1); // increment
} while (classnumber <= noclasses);
} catch (Exception ex) {
    Log.d("CS", "Error in addClasses -->" + ex.getMessage());
    throw ex;
}
}

} // addClasses

public static ArrayList<Batch> getBatches(Context context) {
    DBHelper dbhelper = new DBHelper(context);
    SQLiteDatabase db = dbhelper.getReadableDatabase();
    Cursor batches = db.query(Database.BATCHES_TABLE_NAME, null, null,
        null, null, null, null);
    ArrayList<Batch> list = new ArrayList<Batch>();

    while (batches.moveToNext()) {
        Batch batch = Database.cursorToBatch(batches);
        String enddate = getEndDate(db, batch.getCode());
        batch.setEnddate(enddate);
    }
}

```

```

        list.add(batch);
    }

    batches.close();
    db.close();
    dbhelper.close();

    return list;
} // getBatches

public static ArrayList<Class> getClasses(Context context, String batchcode) {
    DBHelper dbhelper = new DBHelper(context);
    SQLiteDatabase db = dbhelper.getReadableDatabase();
    Cursor classes = db.query(Database.CLASSES_TABLE_NAME, null,
        Database.CLASSES_BATCHCODE + " = ?",
        new String[] { batchcode },
        null, null, Database.CLASSES_CLASSDATE, null);

    ArrayList<Class> list = new ArrayList<Class>();

    while (classes.moveToNext()) {
        Class cls = Database.cursorToClass(classes);
        list.add(cls);
    }

    classes.close();
    db.close();
    dbhelper.close();

    return list;
} // getBatches

public static String getEndDate(SQLiteDatabase db, String batchcode) {
    Cursor cursor = db.query(Database.CLASSES_TABLE_NAME,
        new String[] { Database.CLASSES_CLASSDATE },
        Database.CLASSES_BATCHCODE + "=?", new String[] { batchcode },
        null, null, Database.CLASSES_CLASSDATE + " desc", "1");

    cursor.moveToFirst();
    String enddate =
    cursor.getString(cursor.getColumnIndex(Database.CLASSES_CLASSDATE));
    cursor.close();
    return enddate;
}

public static Batch getBatch (SQLiteDatabase db, String batchcode) {
    Cursor batches = db.query(Database.BATCHES_TABLE_NAME, null,
        Database.BATCHES_BATCHCODE + " = ?" ,

```

```

        new String [] { batchcode},
        null, null, null, null);

Batch batch;
if ( batches.moveToNext() )
    batch = Database.cursorToBatch(batches);
else
    batch = null;
batches.close();
return batch;
}

public static Batch getBatch(Context context, String batchcode) {
    DBHelper dbhelper = new DBHelper(context);
    SQLiteDatabase db = dbhelper.getReadableDatabase();
    Batch batch = getBatch(db,batchcode);
    db.close();
    dbhelper.close();
    return batch;
}

} // getBatch

public static Calendar getCalendar(String date) {

    String [] parts = date.split("-");
    Calendar c = Calendar.getInstance();
    c.set( Integer.parseInt( parts[0]), Integer.parseInt( parts[1]) -1,
    Integer.parseInt( parts[2]));
    return c;
}

public static Class getClass(Context context, String classid) {
    DBHelper dbhelper = new DBHelper(context);
    SQLiteDatabase db = dbhelper.getReadableDatabase();
    Cursor classes = db.query(Database.CLASSES_TABLE_NAME, null,
        Database.CLASSES_CLASSES_ID + " = ?" ,
        new String [] { classid},
        null, null, null, null);

    Class clas;
    if ( classes.moveToNext() )
        clas = Database.cursorToClass(classes);
    else
        clas = null;

    classes.close();
}

```

```

        db.close();
        dbhelper.close();
        return clas;

    } // getBatch

}

```

DBHelper

```

import android.content.Context;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import android.util.Log;

public class DBHelper extends SQLiteOpenHelper {
    public static final int DB_VERSION = 1;
    public static final String DB_NAME = "cs.db";

    public DBHelper(Context ctx) {
        super(ctx, DB_NAME, null, DB_VERSION);
    }

    @Override
    public void onCreate(SQLiteDatabase db) {
        createTables(db);
    }

    @Override
    public void onUpgrade(SQLiteDatabase arg0, int arg1, int arg2) {
    }

    public void createTables(SQLiteDatabase database) {
        String batches_table_sql = "create table " + Database.BATCHES_TABLE_NAME + " (
" +
                Database.BATCHES_ID + " integer primary key autoincrement," +
                Database.BATCHES_BATCHCODE + " TEXT," +
                Database.BATCHES.Course + " TEXT," +
                Database.BATCHES_STARTDATE + " TEXT," +
                Database.BATCHES_STARTTIME + " TEXT," +

```

```

Database.BATCHES_CLASSES + " integer," +
Database.BATCHES_PERIOD + " integer," +
Database.BATCHES_CLASSESPERWEEK + " integer," +
Database.BATCHES_REMARKS + " TEXT)";

String classes_table_sql = "create table " + Database.CLASSES_TABLE_NAME + " (
" +
    Database.CLASSES_CLASSES_ID      + " integer primary key
autoincrement," +
    Database.CLASSES_BATCHCODE + " TEXT," +
    Database.CLASSES_CLASSDATE + " TEXT," +
    Database.CLASSES_CLASSTIME + " TEXT," +
    Database.CLASSES_CLASSPERIOD + " integer," +
    Database.CLASSES_TOPICS+ " TEXT," +
    Database.CLASSES_REMARKS + " TEXT)";

try {
    database.execSQL(batches_table_sql);
    database.execSQL("insert into batches (batchcode,course,
startdate,starttime,classes,period,classesperweek,remarks)"
        + "values ('HB2404','Hibernate','2012-04-
24','19:00',6,90,6,'Short course')");

    database.execSQL(classes_table_sql);

    database.execSQL("insert into classes
(batchcode,classdate,classtime,period,topics,remarks)"
        + "values ('HB2404','2012-04-24','19:00',90,null,null)");
    database.execSQL("insert into classes
(batchcode,classdate,classtime,period,topics,remarks)"
        + "values ('HB2404','2012-04-25','19:00',90,null,null)");
    database.execSQL("insert into classes
(batchcode,classdate,classtime,period,topics,remarks)"
        + "values ('HB2404','2012-04-26','19:00',90,null,null)");
    database.execSQL("insert into classes
(batchcode,classdate,classtime,period,topics,remarks)"
        + "values ('HB2404','2012-04-27','19:00',90,null,null)");
    database.execSQL("insert into classes
(batchcode,classdate,classtime,period,topics,remarks)"
        + "values ('HB2404','2012-04-28','19:00',90,null,null)");
    database.execSQL("insert into classes
(batchcode,classdate,classtime,period,topics,remarks)"

```

```

+      "values ('HB2404','2012-04-30','19:00',90,null,'Last
class')) ;

Log.d("CS", "Tables created!");

}

catch(Exception ex) {
    Log.d("CS", "Error in DBHelper.onCreate() : " + ex.getMessage());
}

}

}

```

ListBatchesActivity

```

import android.app.Activity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.ListView;

public class ListBatchesActivity extends Activity {

    ListView listBatches;
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.listbatches);
    }

    @Override
    public void onStart() {
        super.onStart();
        listBatches = (ListView) this.findViewById(R.id.listBatches);
        BatchesAdapter adapter = new BatchesAdapter(this);
        listBatches.setAdapter(adapter);
    }

    public void addBatch(View v) {
        Intent intent = new Intent(this, AddBatchActivity.class);
        startActivity(intent);
    }
}

```

```
}
```

ListClassesActivity

```
import android.app.Activity;
import android.content.Intent;
import android.graphics.Color;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.widget.ImageButton;
import android.widget.TableLayout;
import android.widget.TableRow;
import android.widget.TextView;

import java.util.List;

public class ListClassesActivity extends Activity {

    String batchcode;
    TableLayout tableClasses;
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.listclasses);

        // get batchcode using intent
        batchcode = getIntent().getStringExtra("batchcode");
        tableClasses = (TableLayout) this.findViewById( R.id.tableClasses );
    }

    @Override
    public void onStart() {
        super.onStart();
        deleteRowsFromTable();
        addRowsToTable(tableClasses,batchcode);
    }

    public void deleteRowsFromTable() {
        if ( tableClasses.getChildCount() > 2)
            tableClasses.removeViews(2,tableClasses.getChildCount() - 2);
    }
}
```

```

private void addRowsToTable(TableLayout table, String batchcode) {

    List<Class> classes = Database.getClasses(this, batchcode);

    TableRow tr = new TableRow(this);
    tr.setLayoutParams(new
        TableLayout.LayoutParams(TableLayout.LayoutParams.MATCH_PARENT,
        TableLayout.LayoutParams.WRAP_CONTENT));

    int classno = 1;
    for(final Class c : classes) {
        TableRow row = (TableRow)
        LayoutInflater.from(this).inflate(R.layout.classrow, null);

        ((TextView)row.findViewById(R.id.textNo)).setText(
        String.valueOf(classno));
        ((TextView)row.findViewById(R.id.textDate)).setText(c.getClassDate());
        ((TextView)row.findViewById(R.id.textTime)).setText(c.getClassTime());

        // handle update button
        ImageButton btnUpdate = (ImageButton) row.findViewById(R.id.btnUpdate);
        btnUpdate.setOnClickListener( new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new Intent(
                    ListClassesActivity.this, UpdateClassActivity.class);
                intent.putExtra("classid", c.getId());
                startActivity(intent);
            }
        });
    };

    table.addView(row);

    TableRow line = new TableRow(this);
    TextView tv = new TextView(this);
    tv.setBackgroundColor(Color.RED);
    TableRow.LayoutParams lp = new
        TableRow.LayoutParams(TableLayout.LayoutParams.MATCH_PARENT, 3);
    lp.span = 4;
    tv.setLayoutParams(lp);

    line.addView(tv);

    table.addView(line);
}

```

```

        classno++;
    }

}

}

```

UpdateBatchActivity

```

import android.app.Activity;
import android.app.AlertDialog;
import android.app.DatePickerDialog;
import android.app.Dialog;
import android.app.TimePickerDialog;
import android.content.DialogInterface;
import android.os.Bundle;
import android.view.View;
import android.widget.DatePicker;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.TimePicker;
import android.widget.Toast;

public class UpdateBatchActivity extends Activity {

    private static final int DATE_DIALOG = 1;
    private static final int TIME_DIALOG = 2;
    private static final int DELETE_ALERT_DIALOG = 3;

    private int day, month, year, hours, mins;
    private TextView textStartDate, textStartTime, textClasses, textClassesPerWeek;
    private EditText editBatchcode, editCourse, editPeriod, editRemarks;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.updatebatch);

        textStartDate = (TextView) this.findViewById(R.id.textStartDate);
        textStartTime = (TextView) this.findViewById(R.id.textStartTime);

        editBatchcode = (EditText) this.findViewById(R.id.editBatchCode);
        editCourse = (EditText) this.findViewById(R.id.editCourse);
    }
}

```

```

editPeriod = (EditText) this.findViewById(R.id.editPeriod) ;
textClasses = (TextView) this.findViewById(R.id.textClasses) ;
textClassesPerWeek = (TextView) this.findViewById(R.id.textClassesPerWeek) ;
editRemarks = (EditText) this.findViewById(R.id.editRemarks) ;

// get details from database
String batchcode = getIntent().getStringExtra("batchcode");
Batch batch = Database.getBatch(this, batchcode);
if (batch == null)
{
    // error
}
else
{
    editBatchcode.setText( batch.getCode());
    editCourse.setText( batch.getCourse());
    textStartDate.setText( batch.getStartdate());
    textStartTime.setText( batch.getStarttime());
    editPeriod.setText( batch.getPeriod());
    textClasses.setText( batch.getClasses());
    textClassesPerWeek.setText( batch.getClassesperweek());
    editRemarks.setText( batch.getRemarks());

    setDateToStartDate( batch.getStartdate());
    setTimeToStartTime( batch.getStarttime());
}

private void setDateToStartDate(String startdate) {
    String [] parts = startdate.split("-");
    day = Integer.parseInt( parts[2]);
    month =Integer.parseInt( parts[1]);
    year = Integer.parseInt( parts[0]);
}

private void setTimeToStartTime(String starttime) {
    String [] parts = starttime.split(":");
    hours = Integer.parseInt( parts[0]);
    mins =Integer.parseInt( parts[1]);
}

public void updateBatch(View v) {

```

```

boolean done = Database.updateBatch(this,
        editBatchcode.getText().toString(),
        editCourse.getText().toString(),
        textStartTime.getText().toString(),
        editPeriod.getText().toString(),
        editRemarks.getText().toString());

if ( done )
    Toast.makeText(this, "Updated batch successfully",
Toast.LENGTH_LONG).show();
else
    Toast.makeText(this, "Sorry! Could not update batch!",
Toast.LENGTH_LONG).show();

}

public void deleteBatch(View v) {
    this.showDialog(DELETE_ALERT_DIALOG);
}

public void showDatePicker(View v) {
    showDialog(DATE_DIALOG);
}

public void showTimePicker(View v) {
    showDialog(TIME_DIALOG);
}

@Override
protected Dialog onCreateDialog(int id) {
    super.onCreateDialog(id);

    switch (id) {
        case DATE_DIALOG:
            return new DatePickerDialog(this, dateSetListener, year, month, day);
        case TIME_DIALOG:
            return new TimePickerDialog(this, timeSetListener, hours, mins, false);
        case DELETE_ALERT_DIALOG:
            return getAlertDialog();
    }
    return null;
}

```

```

}

private DatePickerDialog.OnDateSetListener dateSetListener = new
DatePickerDialog.OnDateSetListener() {

    public void onDateSet(DatePicker view, int pYear, int pMonth, int pDay) {
        year = pYear;
        month = pMonth;
        day = pDay;
        updateDateDisplay();
    }
};

private TimePickerDialog.OnTimeSetListener timeSetListener =
new TimePickerDialog.OnTimeSetListener() {

    @Override
    public void onTimeSet(TimePicker arg0, int pHours, int pMins) {
        hours = pHours;
        mins = pMins;
        updateTimeDisplay();
    }
};

private void updateDateDisplay() {
    // Month is 0 based so add 1
    textStartDate.setText(String.format("%04d-%02d-%02d", year, month + 1, day));
}

private void updateTimeDisplay() {
    // Month is 0 based so add 1
    textStartTime.setText(String.format("%02d:%02d", hours, mins));
}

public Dialog getAlertDialog() {

    AlertDialog.Builder builder = new AlertDialog.Builder(this);
    builder.setMessage("Do you want to delete current batch?")
        .setCancelable(false)
        .setPositiveButton("Yes",

```

```

        new DialogInterface.OnClickListener() {
            public void onClick(DialogInterface dialog, int id) {

                boolean done =
Database.deleteBatch(UpdateBatchActivity.this, editBatchcode.getText().toString());

                if (done) {
                    Toast.makeText(UpdateBatchActivity.this, "Deleted
batch successfully!", Toast.LENGTH_LONG).show();
                    UpdateBatchActivity.this.finish();
                }
                else
                    Toast.makeText(UpdateBatchActivity.this, "Sorry!
Could not delete batch!", Toast.LENGTH_LONG).show();
            }
        })
.setNegativeButton("No", new DialogInterface.OnClickListener() {
    public void onClick(DialogInterface dialog, int id) {
        dialog.cancel();
    }
});
return builder.create();
}
}

```

UpdateClassActivity

```

import android.app.Activity;
import android.app.AlertDialog;
import android.app.DatePickerDialog;
import android.app.Dialog;
import android.app.TimePickerDialog;
import android.content.DialogInterface;
import android.os.Bundle;
import android.view.View;
import android.widget.DatePicker;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.TimePicker;
import android.widget.Toast;

public class UpdateClassActivity extends Activity {

```

```

private static final int TIME_DIALOG = 1;
private static final int CANCEL_ALERT_DIALOG = 2;
private static final int DELETE_ALERT_DIALOG = 3;

private int day, month, year, hours, mins;
private TextView textClassDate, textClassTime, textBatchCode;
private EditText editPeriod,editRemarks, editTopics;

private String classid;

@Override
public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.updateclass);

    textClassDate = (TextView) this.findViewById(R.id.textClassDate);
    textClassTime = (TextView) this.findViewById(R.id.textClassTime);

    textBatchCode = (TextView) this.findViewById(R.id.textBatchCode);
    editPeriod = (EditText) this.findViewById(R.id.editPeriod) ;
    editTopics = (EditText) this.findViewById(R.id.editTopics) ;
    editRemarks = (EditText) this.findViewById(R.id.editRemarks) ;

    // get details from database
    classid = getIntent().getStringExtra("classid");
    Class clas = Database.getClass(this, classid);
    if (clas == null)
    {
        // error
    }
    else
    {
        textBatchCode.setText( clas.getBatchCode());
        textClassDate.setText( clas.getClassDate());
        textClassTime.setText( clas.getClassTime());
        setTimeToStartTime(clas.getClassTime());
        editPeriod.setText( clas.getPeriod());
        editTopics.setText( clas.getTopics());
        editRemarks.setText( clas.getRemarks());
    }
}

```

```

private void setTimeToStartTime(String starttime) {
    String [] parts = starttime.split(":");
    hours = Integer.parseInt( parts[0]);
    mins =Integer.parseInt( parts[1]);
}

public void updateClass(View v) {
    boolean done = Database.updateClass(this,
        classid,
        textClassTime.getText().toString(),
        editPeriod.getText().toString(),
        editTopics.getText().toString(),
        editRemarks.getText().toString());
}

if ( done )
    Toast.makeText(this, "Updated class successfully!",
Toast.LENGTH_LONG).show();
else
    Toast.makeText(this, "Sorry! Could not update class!",
Toast.LENGTH_LONG).show();
}

public void deleteClass(View v) {
    this.showDialog(DELETE_ALERT_DIALOG);
}

public void cancelClass(View v) {
    this.showDialog(CANCEL_ALERT_DIALOG);
}

public void showTimePicker(View v) {
    showDialog(TIME_DIALOG);
}

@Override
protected Dialog onCreateDialog(int id) {
    super.onCreateDialog(id);

    switch (id) {
        case TIME_DIALOG:
            return new TimePickerDialog(this, timeSetListener, hours,mins, false);
        case CANCEL_ALERT_DIALOG:
    }
}

```

```

        return getCancelAlertDialog();
    case DELETE_ALERT_DIALOG:
        return getDeleteAlertDialog();
    }
    return null;
}

private TimePickerDialog.OnTimeSetListener timeSetListener =
    new TimePickerDialog.OnTimeSetListener() {
        @Override
        public void onTimeSet(TimePicker arg0, int pHours, int pMins) {
            hours = pHours;
            mins = pMins;
            updateTimeDisplay();
        }
    };

private void updateTimeDisplay() {
    // Month is 0 based so add 1
    textClassTime.setText(String.format("%02d:%02d", hours, mins));
}

public Dialog getDeleteAlertDialog() {
    AlertDialog.Builder builder = new AlertDialog.Builder(this);
    builder.setMessage("Do you want to delete current class?")
        .setCancelable(false)
        .setPositiveButton("Yes",
            new DialogInterface.OnClickListener() {
                public void onClick(DialogInterface dialog, int id) {
                    boolean done =
Database.deleteClass(UpdateClassActivity.this, classid);

                    if (done) {
                        Toast.makeText(UpdateClassActivity.this, "Deleted
Class Successfully!", Toast.LENGTH_LONG).show();
                        UpdateClassActivity.this.finish();
                    } else
                        Toast.makeText(UpdateClassActivity.this, "Sorry!

```

```

        Could not delete class!", Toast.LENGTH_LONG).show();
    }
}
.setNegativeButton("No", new DialogInterface.OnClickListener() {
    public void onClick(DialogInterface dialog, int id) {
        dialog.cancel();
    }
});
return builder.create();
}

public Dialog getCancelAlertDialog() {
    AlertDialog.Builder builder = new AlertDialog.Builder(this);
    builder.setMessage("Do you want to delete current class and add another
class?");
    .setCancelable(false)
    .setPositiveButton("Yes",
        new DialogInterface.OnClickListener() {
            public void onClick(DialogInterface dialog, int id) {
                boolean done =
Database.cancelClass(UpdateClassActivity.this, textBatchCode.getText().toString(),
classid);
                if (done) {
                    Toast.makeText(UpdateClassActivity.this, "Cancelled
current class and added new class successfully!", Toast.LENGTH_LONG).show();
                    UpdateClassActivity.this.finish();
                }
                else
                    Toast.makeText(UpdateClassActivity.this, "Sorry!
Could not cancel class!", Toast.LENGTH_LONG).show();
            }
        })
    .setNegativeButton("No", new DialogInterface.OnClickListener() {
        public void onClick(DialogInterface dialog, int id) {
            dialog.cancel();
        }
    });
    return builder.create();
}
}

```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.example.manju.myapplication.MainActivity">

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Button1"
        android:id="@+id/Bdisplay"
        android:layout_alignParentBottom="true"
        android:layout_centerHorizontal="true"
        android:layout_marginBottom="177dp"
        android:onClick="onButtonClick" />

</RelativeLayout>
```

Addbatch.xml

```
<?xml version="1.0" encoding="utf-8"?>
<ScrollView xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent" >

    <TableLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:orientation="vertical"
        android:stretchColumns="1" >

        <TableRow >
            <TextView
                android:id="@+id/textView1"
                android:layout_width="100dp"
                android:layout_height="wrap_content"
```

```

        android:text="Code" />
<EditText
    android:id="@+id/editBatchCode"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" >

    <requestFocus />
</EditText>
</TableRow>

<TableRow >

<TextView
    android:id="@+id/textView1"
    android:layout_width="100dp"
    android:layout_height="wrap_content"
    android:text="Course" />

<EditText
    android:id="@+id/editCourse"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" >
</EditText>
</TableRow>

<TableRow >

<TextView
    android:layout_width="100dp"
    android:layout_height="wrap_content"
    android:text="Start Date" />

<LinearLayout
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" >

    <ImageButton
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="showDatePicker"
        android:src="@mipmap/ic_launcher" >
</ImageButton>

<TextView

```

```

        android:id="@+id/textStartDate"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:paddingRight="10dp"
        android:text="2012-04-24" >
    </TextView>
</LinearLayout>
</TableRow>

<TableRow >

    <TextView
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Start Time" />

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" >

        <ImageButton
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:onClick="showTimePicker"
            android:src="@mipmap/ic_launcher" >
        </ImageButton>

        <TextView
            android:id="@+id/textStartTime"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:paddingRight="10dp"
            android:text="19:00" >
        </TextView>
    </LinearLayout>
</TableRow>

<TableRow >

    <TextView
        android:id="@+id/textView1"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="No. Classes" />

```

```

<EditText
    android:id="@+id/editClasses"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:inputType="number" >

</EditText>
</TableRow>

<TableRow >

<TextView
    android:id="@+id/textView1"
    android:layout_width="120dp"
    android:layout_height="wrap_content"
    android:text="Classes Per Week" />

<EditText
    android:id="@+id/editClassesPerWeek"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:inputType="number" >
</EditText>
</TableRow>

<TableRow >

<TextView
    android:id="@+id/textView1"
    android:layout_width="100dp"
    android:layout_height="wrap_content"
    android:text="Period (Min)" />

<EditText
    android:id="@+id/editPeriod"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:inputType="number" >
</EditText>
</TableRow>

<TableRow >

```

```

<TextView
    android:id="@+id/textView1"
    android:layout_width="100dp"
    android:layout_height="wrap_content"
    android:text="Remarks" />

<EditText
    android:id="@+id/editRemarks"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" >
</EditText>
</TableRow>

<TableRow >

<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:onClick="addBatch"
    android:text="Add Batch" >
</Button>
</TableRow>
</TableLayout>

</ScrollView>

```

Addclass.xml

```

<?xml version="1.0" encoding="utf-8"?>
<TableLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
<TableRow>
    <TextView
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Batch Code " />
    <TextView
        android:id="@+id/textBatchCode"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"

```

```

        android:textSize="20sp"
        android:text="Hib2404" >
    </TextView>

</TableRow>
<TableRow >
    <TextView
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Class Date" />

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" >

        <ImageButton
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:onClick="showDatePicker"
            android:src="@mipmap/ic_launcher" >
        </ImageButton>

        <TextView
            android:id="@+id/textClassDate"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:paddingRight="10dp"
            android:text="2012-04-24" >
        </TextView>
    </LinearLayout>
</TableRow>

<TableRow >
    <TextView
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Class Time" />

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" >

        <ImageButton

```

```

        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="showTimePicker"
        android:src="@mipmap/ic_launcher" >
    </ImageButton>

    <TextView
        android:id="@+id/textClassTime"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:paddingRight="10dp"
        android:text="19:00" >
    </TextView>
</LinearLayout>
</TableRow>

<TableRow >

    <TextView
        android:id="@+id/textView1"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Period (Min)" />

    <EditText
        android:id="@+id/editPeriod"
        android:layout_width="50dp"
        android:layout_height="wrap_content"
        android:inputType="number" >
    </EditText>
</TableRow>

<TableRow >

    <TextView
        android:id="@+id/textView1"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Topics" />

```

```

<EditText
    android:id="@+id/editTopics"
    android:layout_width="match_parent"
    android:layout_height="wrap_content" >

</EditText>
</TableRow>

<TableRow >

<TextView
    android:id="@+id/textView1"
    android:layout_width="100dp"
    android:layout_height="wrap_content"
    android:text="Remarks" />

<EditText
    android:id="@+id/editRemarks"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" >
</EditText>
</TableRow>

<TableRow android:layout_span="2">
<CheckBox
    android:id="@+id/chkAdjust"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Adjust Last Class?" >
</CheckBox>
</TableRow>

<TableRow android:layout_span="2" android:gravity="center">
<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:onClick="addClass"
    android:text="Add Class" >
</Button>
</TableRow>

</TableLayout>

```

Batch.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical" >
    <LinearLayout android:layout_width="match_parent"
        android:layout_height="wrap_content">

        <TextView
            android:id="@+id/textCode"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="code"
            android:textSize="16sp" />

        <TextView
            android:id="@+id/textCourse"
            android:gravity="right"
            android:layout_weight="1"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:textSize="16sp"
            android:text="Course"/>
    </LinearLayout>

    <LinearLayout android:layout_width="match_parent"
        android:layout_height="wrap_content">
        <TextView
            android:id="@+id/textStartDate"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:textSize="16sp"
            android:text="stdate" />

        <TextView
            android:id="@+id/textEndDate"
            android:gravity="right"
            android:layout_weight="1"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:textSize="16sp"
            android:text="EndDate" />
    
```

```
</LinearLayout>

<LinearLayout android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:gravity="center">

    <Button
        android:id="@+id	btnClasses"
        android:layout_width="wrap_content"
        android:layout_height="40dp"
        android:text="List Classes" />

    <Button
        android:id="@+id	btnAddClass"
        android:layout_width="wrap_content"
        android:layout_height="40dp"
        android:text="Add Class" />

    <Button
        android:id="@+id	btnUpdate"
        android:layout_width="wrap_content"
        android:layout_height="40dp"
        android:text="Update" />

</LinearLayout>

<LinearLayout android:layout_width="match_parent"
    android:layout_height="wrap_content">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="3dp"
        android:background="#ff0000"
        android:text="" />

</LinearLayout>

</LinearLayout>
```

Classrow.xml

```
<?xml version="1.0" encoding="utf-8"?>
<TableRow xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="wrap_content">

    <TextView
        android:id="@+id/textNo"
        android:layout_width="80dp"
        android:layout_height="wrap_content"
        android:gravity="center"
        android:text="no" />

    <TextView
        android:id="@+id/textDate"
        android:layout_width="80dp"
        android:layout_height="wrap_content"
        android:gravity="center"
        android:text="Date" />

    <TextView
        android:id="@+id/textTime"
        android:layout_width="80dp"
        android:layout_height="wrap_content"
        android:gravity="center"
        android:text="Time" />

    <ImageButton
        android:id="@+id/btnUpdate"
        android:layout_width="wrap_content"
        android:layout_height="30dp"
        android:layout_gravity="center"
        android:adjustViewBounds="true"
        android:src="@mipmap/ic_launcher"
        android:textSize="12sp" />

</TableRow>
```

Listbatches.xml

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical" >

    <ListView
        android:id="@+id/listBatches"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" >
    </ListView>

    <Button
        android:id="@+id/butAddBatch"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="addBatch"
        android:layout_gravity="center_horizontal"
        android:text="Add New Batch" />

</LinearLayout>

```

Listclasses.xml

```

<?xml version="1.0" encoding="utf-8"?>
<ScrollView xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <TableLayout
        android:id="@+id/tableClasses"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:stretchColumns="*"

        <TableRow android:layout_width="match_parent"
            android:layout_height="wrap_content">
            <TextView
                android:layout_width="80dp"
                android:gravity="center"
                android:layout_height="wrap_content"
                android:text="Class No." />

```

```

<TextView
    android:layout_width="80dp"
    android:layout_height="wrap_content"
    android:gravity="center"
    android:text="Class Date" />

<TextView
    android:layout_width="80dp"
    android:layout_height="wrap_content"
    android:gravity="center"
    android:text="Class Time" />

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:gravity="center"
    android:text="" />

</TableRow>

<TableRow android:layout_width="match_parent"
    android:layout_height="wrap_content">
    <TextView
        android:layout_width="match_parent"
        android:layout_span="4"
        android:layout_height="3dp"
        android:background="#ff0000"
        android:text="" />
</TableRow>
</TableLayout>

</ScrollView>

```

Main.xml

```

<?xml version="1.0" encoding="UTF-8" ?>

<LinearLayout android:orientation="vertical" android:layout_height="fill_parent"
    android:layout_width="fill_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <TextView android:layout_height="wrap_content" android:layout_width="fill_parent"
        android:text="@string/hello"/>

```

```
</LinearLayout>
```

Updatebatch.xml

```
<?xml version="1.0" encoding="utf-8" ?>
<ScrollView xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent" >

    <TableLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:orientation="vertical"
        android:stretchColumns="1" >

        <TableRow >

            <TextView
                android:id="@+id/textView1"
                android:layout_width="100dp"
                android:layout_height="wrap_content"
                android:text="Code" />

            <EditText
                android:id="@+id/editBatchCode"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content" >

                <requestFocus />
            </EditText>
        </TableRow>

        <TableRow >

            <TextView
                android:id="@+id/textView1"
                android:layout_width="100dp"
                android:layout_height="wrap_content"
                android:text="Course" />

            <EditText
                android:id="@+id/editCourse"
```

```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" >
    </EditText>
</TableRow>

<TableRow >

    <TextView
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Start Date" />

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" >

        <TextView
            android:id="@+id/textStartDate"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:paddingRight="10dp"
            android:text="2012-04-24"
            android:textSize="20sp" >

        </TextView>
    </LinearLayout>
</TableRow>

<TableRow >

    <TextView
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Start Time" />

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" >

        <ImageButton
            android:layout_width="wrap_content"
```

```

        android:layout_height="wrap_content"
        android:onClick="showTimePicker"
        android:src="@mipmap/ic_launcher" >

    </ImageButton>

    <TextView
        android:id="@+id/textStartTime"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:paddingRight="10dp"
        android:text="19:00"
        android:textSize="20sp" >

    </TextView>
</LinearLayout>
</TableRow>

<TableRow >

    <TextView
        android:id="@+id/textView1"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="No. Classes" />

    <TextView
        android:id="@+id/textClasses"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="20sp" />

</TableRow>

<TableRow >

    <TextView
        android:id="@+id/textView1"
        android:layout_width="120dp"
        android:layout_height="wrap_content"
        android:text="Classes Per Week" />

```

```

<TextView
    android:id="@+id/textClassesPerWeek"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textSize="20sp" />

</TableRow>

<TableRow >

<TextView
    android:id="@+id/textView1"
    android:layout_width="100dp"
    android:layout_height="wrap_content"
    android:text="Period (Min)" />

<EditText
    android:id="@+id/editPeriod"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:inputType="number" >
</EditText>
</TableRow>

<TableRow >

<TextView
    android:id="@+id/textView1"
    android:layout_width="100dp"
    android:layout_height="wrap_content"
    android:text="Remarks" />

<EditText
    android:id="@+id/editRemarks"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" >
</EditText>
</TableRow>

<TableRow>
<LinearLayout
    android:layout_span="2"

```

```

        android:layout_width="wrap_content"
        android:layout_height="wrap_content"  >
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="updateBatch"
        android:text="Update"  >
    </Button>

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="deleteBatch"
        android:text="Delete"  >
    </Button>
</LinearLayout>
</TableRow>
</TableLayout>

</ScrollView>

```

Updateclass.xml

```

<?xml version="1.0" encoding="utf-8"?>
<ScrollView xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="wrap_content">
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical" >

        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content" >

            <TextView
                android:layout_width="100dp"
                android:layout_height="wrap_content"
                android:text="Batch Code " />

            <TextView
                android:id="@+id/textBatchCode"
                android:layout_width="wrap_content"

```

```
        android:layout_height="wrap_content"
        android:text="Hib2404"
        android:textSize="20sp" >
    </TextView>
</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content" >

    <TextView
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Class Date" />

    <TextView
        android:id="@+id/textClassDate"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="2012-04-24"
        android:textSize="20sp" >
    </TextView>
</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content" >

    <TextView
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Class Time" />

    <ImageButton
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="showTimePicker"
        android:src="@mipmap/ic_launcher" >
    </ImageButton>

    <TextView
        android:id="@+id/textClassTime"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```

        android:paddingRight="10dp"
        android:text="00:00"
        android:textSize="20sp" >
    </TextView>
</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content" >

    <TextView
        android:id="@+id/textView1"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Period (Min) " />

    <EditText
        android:id="@+id/editPeriod"
        android:layout_width="50dp"
        android:layout_height="wrap_content"
        android:inputType="number" >
    </EditText>
</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content" >

    <TextView
        android:id="@+id/textView1"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Topics" />

    <EditText
        android:id="@+id/editTopics"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" >
    </EditText>
</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content" >

```

```

<TextView
    android:id="@+id/textView1"
    android:layout_width="100dp"
    android:layout_height="wrap_content"
    android:text="Remarks" />

<EditText
    android:id="@+id/editRemarks"
    android:layout_width="match_parent"
    android:layout_height="wrap_content" >
</EditText>
</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:gravity="center" >

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="updateClass"
        android:text="Update" >
</Button>

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="cancelClass"
        android:text="Cancel Class" >
</Button>

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="deleteClass"
        android:text="Delete" >
</Button>
</LinearLayout>

</LinearLayout>

```

String.xml

```
<resources>
    <string name="app_name">My Application</string>
    <string name="action_settings">Settings</string>
    <string name="hello">Hello World, ClassSchedulerActivity!</string>

</resources>
```

Manifest.xml file

```
<?xml version="1.0" encoding="utf-8" ?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.manju.myapplication">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity
            android:name=".MainActivity"
            android:label="@string/app_name"
            android:theme="@style/AppTheme.NoActionBar">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>

        <activity android:label="List Of Batches" android:name=".ListBatchesActivity"/>

        <activity android:label="Add Batch" android:name=".AddBatchActivity"/>

        <activity android:label="List Classes" android:name=".ListClassesActivity"/>

        <activity android:label="Add Class" android:name=".AddClassActivity"/>
```

```

<activity android:label="Update Batch" android:name=".UpdateBatchActivity"/>

<activity android:label="Update Class" android:name=".UpdateClassActivity"/>

</application>

</manifest>

```

- Bank details application

ListAccounts.java

```

import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.content.Intent;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.os.Bundle;
import android.util.Log;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.AdapterView;
import android.widget.AdapterView.OnItemClickListener;
import android.widget.ListView;
import android.widget.SimpleCursorAdapter;
import android.widget.TextView;
import android.widget.Toast;

public class ListAccounts extends AppCompatActivity {

    ListView listAccounts;
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.listaccounts);
        listAccounts = (ListView) this.findViewById(R.id.listAccounts);
        listAccounts.setOnItemClickListener( new OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> parent, View selectedView, int

```

```

        arg2, long arg3) {

        TextView textAccountId = (TextView)
selectedView.findViewById(R.id.textAccountId);
        Log.d("Accounts", "Selected Account Id : " +
textAccountId.getText().toString());

        Intent intent = new Intent(ListAccounts.this, UpdateAccount.class);
        intent.putExtra("accountid", textAccountId.getText().toString());
        startActivity(intent);
    }
});;
}

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    return Utils.inflateMenu(this,menu);
}

@Override
public boolean onOptionsItemSelected(MenuItem item) {
    return Utils.handleMenuOption(this,item);
}

@Override
public void onStart() {
    super.onStart();
    try {
        DBHelper dbhelper = new DBHelper(this);
        SQLiteDatabase db = dbhelper.getReadableDatabase();
        Cursor accounts = db.query(
Database.ACCOUNTS_TABLE_NAME,null,null,null,null,null,null);

        String from [] = { Database.ACCOUNTS_ID, Database.ACCOUNTS_BANK,
Database.ACCOUNTS HOLDERS, Database.ACCOUNTS_BALANCE };
        int to [] = { R.id.textAccountId,R.id.textBank, R.id.textHolder,
R.id.textBalance};

        SimpleCursorAdapter ca = new SimpleCursorAdapter(this,R.layout.account,
accounts,from,to);

        ListView listAccounts = (ListView) this.findViewById( R.id.listAccounts);
        listAccounts.setAdapter(ca);
        dbhelper.close();
    } catch (Exception ex) {

```

```

        Toast.makeText(this, ex.getMessage(), Toast.LENGTH_LONG).show();
    }
}

public void addAccount(View v)
{
    Intent intent = new Intent(this,AddAccount.class);
    startActivity(intent);
}

public void addTransaction(View v)
{
    Intent intent = new Intent(this,AddTransaction.class);
    startActivity(intent);
}

public void recentTransactions(View v)
{
    Intent intent = new Intent(this,ListRecentTransactions.class);
    startActivity(intent);
}
}

```

Account.java

```

public class Account {
    private String id,acno,bank,branch,holder;

    public String getId() {
        return id;
    }

    public void setId(String id) {
        this.id = id;
    }

    public String getAcno() {
        return acno;
    }

    public void setAcno(String acno) {
        this.acno = acno;
    }
}

```

```

    }

    public String getBank() {
        return bank;
    }

    public void setBank(String bank) {
        this.bank = bank;
    }

    public String getBranch() {
        return branch;
    }

    public void setBranch(String branch) {
        this.branch = branch;
    }

    public String getHolder() {
        return holder;
    }

    public void setHolder(String holder) {
        this.holder = holder;
    }

    @Override
    public String toString() {
        return holder + " - " + bank;
    }
}

```

AddAccount.java

```

import android.app.Activity;
import android.content.ContentValues;
import android.database.sqlite.SQLiteDatabase;
import android.os.Bundle;
import android.util.Log;
import android.view.Menu;
import android.view.MenuItem;

```

```

import android.view.View;
import android.widget.EditText;
import android.widget.Toast;

public class AddAccount extends Activity {

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.addaccount);
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        return Utils.inflateMenu(this,menu);
    }

    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        return Utils.handleMenuItem(this,item);
    }

    public void addAccount(View v) {
        // get access to views
        EditText editAcno = (EditText) this.findViewById(R.id.editAcno);
        EditText editCno = (EditText) this.findViewById(R.id.editCno);
        EditText editHolders = (EditText) this.findViewById(R.id.editHolders);
        EditText editBankName = (EditText) this.findViewById(R.id.editBankName);
        EditText editBranchName = (EditText) this.findViewById(R.id.editBranchName);
        EditText editAddress = (EditText) this.findViewById(R.id.editAddress);
        EditText editIFSC = (EditText) this.findViewById(R.id.editIFSC);
        EditText editMICR = (EditText) this.findViewById(R.id.editMICR);
        EditText editBalance = (EditText) this.findViewById(R.id.editBalance);
        EditText editRemarks = (EditText) this.findViewById(R.id.editRemarks);

        try {
            DBHelper dbhelper = new DBHelper(this);
            SQLiteDatabase db = dbhelper.getWritableDatabase();
            Log.d("Account","Got Writable database");
            // execute insert command

            ContentValues values = new ContentValues();
            values.put( Database.ACCOUNTS_ACNO, editAcno.getText().toString());

```

```

values.put( Database.ACCTS_CNO, editCno.getText().toString());
values.put( Database.ACCTS HOLDERS, editHolders.getText().toString());
values.put( Database.ACCTS BANK, editBankName.getText().toString());
values.put( Database.ACCTS BRANCH,
editBranchName.getText().toString());
values.put( Database.ACCTS ADDRESS, editAddress.getText().toString());
values.put( Database.ACCTS IFSC, editIFSC.getText().toString());
values.put( Database.ACCTS MICR, editMICR.getText().toString());
values.put( Database.ACCTS BALANCE, editBalance.getText().toString());
values.put( Database.ACCTS REMARKS, editRemarks.getText().toString());

long rows = db.insert(Database.ACCTS_TABLE_NAME, null, values);
db.close();
if ( rows > 0) {
    Toast.makeText(this, "Added Account Successfully!",
Toast.LENGTH_LONG).show();
    this.finish();
}
else
    Toast.makeText(this, "Sorry! Could not add account!",
Toast.LENGTH_LONG).show();

} catch (Exception ex) {
    Toast.makeText(this, ex.getMessage(), Toast.LENGTH_LONG).show();
}
}

}

```

AddTransaction

```

import java.util.Calendar;
import android.app.Activity;
import android.app.DatePickerDialog;
import android.app.Dialog;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.DatePicker;
import android.widget.EditText;
import android.widget.RadioButton;

```

```

import android.widget.Spinner;
import android.widget.TextView;
import android.widget.Toast;

public class AddTransaction extends Activity {
    private Spinner spinnerAccounts;
    private TextView textTransDate;
    private int day, month, year;
    private final int DATE_DIALOG = 1;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.add_transaction);
        spinnerAccounts = (Spinner) this.findViewById(R.id.spinnerAccounts);
        Database.populateAccounts(spinnerAccounts);
        textTransDate = (TextView) this.findViewById(R.id.textTransDate);
        // get the current date
        final Calendar c = Calendar.getInstance();
        year = c.get(Calendar.YEAR);
        month = c.get(Calendar.MONTH);
        day = c.get(Calendar.DAY_OF_MONTH);
        updateDateDisplay();
    }

    private DatePickerDialog.OnDateSetListener dateSetListener =
        new DatePickerDialog.OnDateSetListener() {

            public void onDateSet(DatePicker view, int pYear,int pMonth, int pDay)
            {
                year = pYear;
                month = pMonth;
                day = pDay;
                updateDateDisplay();
            }
        };
}

@Override
public void onStart() {
    super.onStart();
}

```

```

public void showDatePickerDialog(View v) {
    showDialog(DATE_DIALOG);
}

@Override
protected Dialog onCreateDialog(int id) {
    super.onCreateDialog(id);

    switch (id) {
        case DATE_DIALOG:
            return new DatePickerDialog(this,
                dateSetListener, year, month, day);
    }
    return null;
}

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    return Utils.inflateMenu(this, menu);
}

@Override
public boolean onOptionsItemSelected(MenuItem item) {
    return Utils.handleMenuItem(this, item);
}

private void updateDateDisplay() {
    // Month is 0 based so add 1
    textTransDate.setText( String.format("%d-%d-%d", year, month + 1, day));
}

public void addTransaction(View v) {
    // get access to views
    String accountId = Database.getAccountId(spinnerAccounts);
    RadioButton radioDeposit = (RadioButton)
this.findViewById(R.id.radioDeposit);

    EditText editTransAmount = (EditText) this.findViewById(R.id.editTransAmount);
    EditText editChequeNo = (EditText) this.findViewById(R.id.editChequeNo);
    EditText editChequeParty = (EditText) this.findViewById(R.id.editChequeParty);
    EditText editChequeDetails = (EditText)

this.findViewById(R.id.editChequeDetails);
    EditText editRemarks = (EditText) this.findViewById(R.id.editRemarks);
}

```

```

boolean done = Database.addTransaction(this,
    accountId,
    radioDeposit.isChecked() ? "d" : "w", // trans type
    textTransDate.getText().toString(),
    editTransAmount.getText().toString(),
    editChequeNo.getText().toString(),
    editChequeParty.getText().toString(),
    editChequeDetails.getText().toString(),
    editRemarks.getText().toString());

if ( done )
    Toast.makeText(this,"Added Transaction Successfully",
Toast.LENGTH_LONG).show();
else
    Toast.makeText(this, "Sorry Could Not Add Transaction!",
Toast.LENGTH_LONG).show();
} // addDeposit
}

```

Database

```

import java.util.ArrayList;
import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.util.Log;
import android.widget.ArrayAdapter;
import android.widget.DatePicker;
import android.widget.Spinner;

public class Database {
    public static final String ACCOUNTS_TABLE_NAME = "accounts";
    public static final String ACCOUNTS_ID = "_id";
    public static final String ACCOUNTS_ACNO = "acno";
    public static final String ACCOUNTS HOLDERS = "holders";
    public static final String ACCOUNTS_CNO = "customerno";
    public static final String ACCOUNTS_BANK = "bank";
    public static final String ACCOUNTS_BRANCH = "branch";
    public static final String ACCOUNTS_ADDRESS = "address";
    public static final String ACCOUNTS_IFSC = "ifsc";
    public static final String ACCOUNTS_MICR = "micr";
}

```

```

public static final String ACCOUNTS_BALANCE = "balance";
public static final String ACCOUNTS_LASTTRANS = "last_tran_date";
public static final String ACCOUNTS_REMARKS = "remarks";

public static final String TRANSACTIONS_TABLE_NAME = "transactions";
public static final String TRANSACTIONS_ID = "_id";
public static final String TRANSACTIONS_ACCOUNT_ID = "account_id";
public static final String TRANSACTIONS_TRANSDATE = "transdate";
public static final String TRANSACTIONS_TRANSTYPE = "transtype";
public static final String TRANSACTIONS_TRANSAMOUNT = "transamount";
public static final String TRANSACTIONS_CHEQUE_NO = "cheque_no";
public static final String TRANSACTIONS_CHEQUE_PARTY = "cheque_party";
public static final String TRANSACTIONS_CHEQUE_DETAILS = "cheque_details";
public static final String TRANSACTIONS_REMARKS = "remarks";

public static Account cursorToAccount(Cursor accounts) {
    Account account = new Account();
    account.setId(
        accounts.getString(accounts.getColumnIndex(Database.ACCOUNTS_ID)));
    account.setHolder(accounts.getString(accounts.getColumnIndex(Database.ACCOUNTS_HOLDERS)));
    account.setBank(
        accounts.getString(accounts.getColumnIndex(Database.ACCOUNTS_BANK)));
    return account;
}

public static void populateAccounts(Spinner spinnerAccounts) {
    Context context = spinnerAccounts.getContext();
    DBHelper dbhelper = new DBHelper(context);
    SQLiteDatabase db = dbhelper.getReadableDatabase();
    Cursor accounts = db.query(Database.ACCOUNTS_TABLE_NAME, null, null,null,
    null, null);
    ArrayList<Account> list = new ArrayList<Account>();

    //
    adapter.setDropDownViewResource(android.R.layout.simple_spinner_dropdown_item);
    while (accounts.moveToNext()) {
        Account account = Database.cursorToAccount(accounts);
        list.add(account);
    }
    accounts.close();
    db.close();
    dbhelper.close();
}

```

```

        ArrayAdapter<Account> adapter = new ArrayAdapter<Account>(context,
        android.R.layout.simple_spinner_item, list);
        spinnerAccounts.setAdapter(adapter);
    }

    public static boolean updateAccountBalance(SQLiteDatabase db, String accountId,
String transType, double amount, String transDate) {
    try {
        if (transType.equals("d"))
            db.execSQL( " update " + Database.ACCOUNTS_TABLE_NAME + " set balance
= balance + " + amount + " where " + Database.ACCOUNTS_ID + " = " + accountId);
        else
            db.execSQL( " update " + Database.ACCOUNTS_TABLE_NAME + " set balance
= balance - " + amount + " where " + Database.ACCOUNTS_ID + " = " + accountId);
        return true;
    }
    catch(Exception ex) {
        Log.d("Accounts", "Error in UpdateBalance : " + ex.getMessage());
        return false;
    }
}

public static String getAccountId(Spinner spinnerAccounts) {
    Account account = (Account) spinnerAccounts.getSelectedItem();
    return account.getId();
}

public static String getDateFromDatePicker(DatePicker dp) {
    return dp.getYear() + "-" + dp.getMonth() + 1 + "-" + dp.getDayOfMonth();
}

public static boolean addTransaction(Context context, String accountId, String
transType, String transDate, String transAmount, String chequeNo, String chequeParty,
String chequeDetails, String remarks) {

    DBHelper dbhelper = null;
    SQLiteDatabase db = null;
    try {
        dbhelper = new DBHelper(context);
        db = dbhelper.getWritableDatabase();
        db.beginTransaction();

        // execute insert command

```

```

ContentValues values = new ContentValues();
values.put(Database.TRANSACTIONS_ACCOUNT_ID, accountId);
values.put(Database.TRANSACTIONS_TRANSDATE, transDate);
values.put(Database.TRANSACTIONS_TRANSAMOUNT, transAmount);
values.put(Database.TRANSACTIONS_CHEQUE_NO, chequeNo);
values.put(Database.TRANSACTIONS_CHEQUE_PARTY, chequeParty);
values.put(Database.TRANSACTIONS_CHEQUE_DETAILS, chequeDetails);
values.put(Database.TRANSACTIONS_REMARKS, remarks);
values.put(Database.TRANSACTIONS_TRANSTYPE, transType);

long rowid = db.insert(Database.TRANSACTIONS_TABLE_NAME, null, values);
Log.d("Accounts", "Inserted into TRANSACTIONS " + rowid);
if (rowid != -1) {
    // update Accounts Table
    boolean done = Database.updateAccountBalance(db, accountId, transType,
Double.parseDouble(transAmount), transDate);
    Log.d("Accounts", "Updated Account Balance");
    if (done) {
        db.setTransactionSuccessful();
        db.endTransaction();
        return true;
    }
    else {
        db.endTransaction();
        return false;
    }
}
else
    return false;
}

catch(Exception ex) {
    Log.d("Account", "Error in addTransaction -->" + ex.getMessage());
    return false;
}

finally {
    if (db != null && db.isOpen())
        db.close();
}
}

} // addTransaction
}

```

DBHelper.java

```
import android.content.Context;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import android.util.Log;

public class DBHelper extends SQLiteOpenHelper {
    public static final int DB_VERSION = 1;
    public static final String DB_NAME = "accounts.db";

    public DBHelper(Context ctx) {
        super(ctx, DB_NAME, null, DB_VERSION);
    }

    @Override
    public void onCreate(SQLiteDatabase db) {
        createTables(db);
    }

    @Override
    public void onUpgrade(SQLiteDatabase arg0, int arg1, int arg2) {
    }

    public void createTables(SQLiteDatabase database) {
        String account_table_sql = "create table " + Database.ACCTS_TABLE_NAME + "
(" +
            Database.ACCTS_ID + " integer primary key autoincrement," +
            Database.ACCTS_ACNO + " TEXT," +
            Database.ACCTS HOLDERS + " TEXT," +
            Database.ACCTS_CNO + " TEXT," +
            Database.ACCTS_BANK + " TEXT," +
            Database.ACCTS_BRANCH + " TEXT," +
            Database.ACCTS_ADDRESS + " TEXT," +
            Database.ACCTS_IFSC + " TEXT," +
            Database.ACCTS_MICR + " TEXT," +
            Database.ACCTS_BALANCE + " FLOAT," +
            Database.ACCTS_LASTTRANS + " TEXT," +
            Database.ACCTS_REMARKS + " TEXT)";
    }
}
```

```

        String transactions_table_sql = "create table " +
Database.TRANSACTIONS_TABLE_NAME + " ( " +
        Database.TRANSACTIONS_ID + " integer primary key autoincrement," +
        Database.TRANSACTIONS_ACCOUNT_ID + " TEXT," +
        Database.TRANSACTIONS_TRANSDATE + " TEXT," +
        Database.TRANSACTIONS_TRANSAMOUNT + " FLOAT," +
        Database.TRANSACTIONS_TRANSTYPE+ " TEXT," +
        Database.TRANSACTIONS_CHEQUE_NO + " TEXT," +
        Database.TRANSACTIONS_CHEQUE_PARTY + " TEXT," +
        Database.TRANSACTIONS_CHEQUE_DETAILS+ " TEXT," +
        Database.TRANSACTIONS_REMARKS + " TEXT) ";

    try {
        database.execSQL(account_table_sql);
        database.execSQL(transactions_table_sql);
        Log.d("Accounts", "Tables created!");

    }
    catch(Exception ex) {
        Log.d("Accounts", "Error in DBHelper.onCreate() : " + ex.getMessage());
    }
}

}

```

ListAccountTransactions.java

```

import java.util.ArrayList;
import java.util.LinkedHashMap;
import java.util.Map;
import android.app.Activity;
import android.content.Intent;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.opengl.Visibility;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;

```

```

import android.widget.AdapterView;
import android.widget.AdapterView.OnItemClickListener;
import android.widget.ListView;
import android.widget.SimpleAdapter;
import android.widget.TextView;
import android.widget.Toast;

public class ListAccountTransactions extends Activity {
    ListView listTransactions;
    String accountId;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.list_account_transactions);
        accountId = this.getIntent().getStringExtra("accountid");
        listTransactions = (ListView) this.findViewById(R.id.listTransactions);

        listTransactions.setOnItemClickListener(new OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> parent, View selectedView,
                    int arg2, long arg3) {
                TextView textTransId = (TextView) selectedView
                        .findViewById(R.id.textTransId);
                Intent intent = new Intent(ListAccountTransactions.this,
                        TransactionDetails.class);
                intent.putExtra("transid", textTransId.getText().toString());
                startActivity(intent);
            }
        });
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        return Utils.inflateMenu(this, menu);
    }

    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        return Utils.handleMenuOption(this, item);
    }

    @Override
    public void onStart() {

```

```

super.onStart();
try {
    DBHelper dbhelper = new DBHelper(this);
    SQLiteDatabase db = dbhelper.getReadableDatabase();
    Cursor trans = db.query(Database.TRANSACTIONS_TABLE_NAME, null,
        Database.TRANSACTIONS_ACCOUNT_ID + " = ?",
        new String[] { accountId }, null, null,
        Database.TRANSACTIONS_TRANSDATE + " desc");

    if (trans.getCount() == 0) // no trans found
    {
        // turn off tablelayout and turnon textView for no transactions
        // display
        this.findViewById(R.id.heading).setVisibility(View.INVISIBLE);
        this.findViewById(R.id.textError).setVisibility(View.VISIBLE);
    } else {
        this.findViewById(R.id.heading).setVisibility(View.VISIBLE);
        this.findViewById(R.id.textError).setVisibility(View.INVISIBLE);
    }
}

ArrayList<Map<String, String>> listTrans = new ArrayList<Map<String,
String>>();
while (trans.moveToFirst()) {

    // get trans details for display
    LinkedHashMap<String, String> tran = new LinkedHashMap<String,
String>();
    tran.put("transid", trans.getString(trans
        .getColumnIndex(Database.TRANSACTIONS_ID)));
    tran.put("transdate", trans.getString(trans
        .getColumnIndex(Database.TRANSACTIONS_TRANSDATE)));
    String transType = trans.getString(trans
        .getColumnIndex(Database.TRANSACTIONS_TRANSTYPE));
    String transAmount = trans.getString(trans
        .getColumnIndex(Database.TRANSACTIONS_TRANSAMOUNT));
    String chequeno = trans.getString(trans
        .getColumnIndex(Database.TRANSACTIONS_CHEQUE_NO));
    String transDetails = "Cash";
    if (!chequeno.trim().equals(""))
        transDetails = "Cheque No: " + chequeno;
    tran.put("transdetails", transDetails);
    tran.put("transtype", transType);
    tran.put("transamount", transAmount);
    listTrans.add(tran);
}

```

```

        }

        trans.close();
        db.close();
        dbhelper.close();

        SimpleAdapter adapter = new SimpleAdapter(this, listTrans,
            R.layout.account_transaction, new String[] { "transid",
            "transdate", "transdetails", "transtype",
            "transamount" }, new int[] { R.id.textTransId,
            R.id.textTransDate, R.id.textTransDetails,
            R.id.textTransType, R.id.textAmount });

        listTransactions.setAdapter(adapter);
    } catch (Exception ex) {
        Toast.makeText(this, ex.getMessage(), Toast.LENGTH_LONG).show();
    }
}

}

```

ListRecentTransactions.java

```

import java.util.ArrayList;
import java.util.LinkedHashMap;
import java.util.Map;
import android.app.Activity;
import android.content.Intent;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.AdapterView;
import android.widget.AdapterView.OnItemClickListener;
import android.widget.ListView;
import android.widget.SimpleAdapter;
import android.widget.TextView;
import android.widget.Toast;

public class ListRecentTransactions extends Activity {
    ListView listTransactions;
    String fromDate,toDate,fromAmount,toAmount;

```

```

String condition = " 1 = 1 ";
@Override
public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.list_transactions);
    listTransactions = (ListView) this.findViewById(R.id.listTransactions);

    listTransactions.setOnItemClickListener( new OnItemClickListener() {
        @Override
        public void onItemClick(AdapterView<?> parent, View selectedView, int arg2, long arg3) {
            TextView textTransId = (TextView)
selectedView.findViewById(R.id.textTransId);
            Intent intent = new Intent(ListRecentTransactions.this,
TransactionDetails.class);
            intent.putExtra("transid", textTransId.getText().toString());
            startActivity(intent);
        }
    });
}

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    return Utils.inflateMenu(this,menu);
}

@Override
public boolean onOptionsItemSelected(MenuItem item) {
    return Utils.handleMenuOption(this,item);
}

@Override
public void onStart() {
    super.onStart();
    try {
        DBHelper dbhelper = new DBHelper(this);
        SQLiteDatabase db = dbhelper.getReadableDatabase();
        Cursor trans = db.rawQuery("select t._id, acno,bank,
transdate,transamount,transtype,cheque_no,cheque_party,cheque_details, t.remarks from
transactions t inner join accounts a on ( a._id = t.account_id) order by transdate
desc  LIMIT 10",null);
        if ( trans.getCount() == 0 )
            this.findViewById(R.id.textError).setVisibility(View.VISIBLE);
    }
}

```

```

else
    this.findViewById(R.id.textError).setVisibility(View.INVISIBLE);

ArrayList<Map<String, String>> listTrans = new
ArrayList<Map<String, String>>();
while ( trans.moveToFirst() ) {
    // get trans details for display
    LinkedHashMap<String, String> tran = new
LinkedHashMap<String, String>();
    tran.put("transid",
trans.getString(trans.getColumnIndex(Database.TRANSACTIONS_ID)));
    tran.put("acno",
trans.getString(trans.getColumnIndex(Database.ACCOUNTS_ACNO)) + " - " +
trans.getString(trans.getColumnIndex(Database.ACCOUNTS_BANK)));
    tran.put("transdate", trans.getString(trans.getColumnIndex(Database.TRANSACTIONS_TRANS
DATE)));
    tran.put("transtype", trans.getString(trans.getColumnIndex(Database.TRANSACTIONS_TRANST
YPE)));
    tran.put("transamount", trans.getString(trans.getColumnIndex(Database.TRANSACTIONS_TRAN
SAMOUNT)));
    tran.put("transremarks", trans.getString(trans.getColumnIndex(Database.TRANSACTIONS_REM
ARKS)));
    String chequeno =
trans.getString(trans.getColumnIndex(Database.TRANSACTIONS_CHEQUE_NO));
    String transDetails = "Cash";
    if (! chequeno.trim().equals(""))
        transDetails = "Cheque No: " + chequeno;
    tran.put("transdetails", transDetails);
    listTrans.add(tran);
}
trans.close();
db.close();
dbhelper.close();

SimpleAdapter adapter = new SimpleAdapter(this,
listTrans,
R.layout.transaction,
new String [] {"transid", "acno", "transdate", "transdetails",

```

```

"transtype", "transamount", "transremarks"},  

        new int [] { R.id.textTransId, R.id.textAcno,  

R.id.textTransDate, R.id.textTransDetails, R.id.textTransType, R.id.textTransAmount,  

R.id.textTransRemarks});  
  

        listTransactions.setAdapter(adapter);  

    } catch (Exception ex) {  

        Toast.makeText(this, ex.getMessage(), Toast.LENGTH_LONG).show();  

    }  

}  
  

}

```

SearchTransactions.java

```

import java.util.Calendar;  

import android.app.Activity;  

import android.app.DatePickerDialog;  

import android.app.Dialog;  

import android.content.Intent;  

import android.os.Bundle;  

import android.view.Menu;  

import android.view.MenuItem;  

import android.view.View;  

import android.widget.DatePicker;  

import android.widget.EditText;  

import android.widget.RadioButton;  

import android.widget.Spinner;  

import android.widget.TextView;  

import android.widget.Toast;  
  

public class SearchTransactions extends Activity {  

    private EditText editFromDate, editToDate, editFromAmount, editToAmount;  

    private int fromDay, fromMonth, fromYear;  

    private int toDay, toMonth, toYear;  

    private final int FROM_DATE_DIALOG = 1;  

    private final int TO_DATE_DIALOG = 2;  
  

    @Override  

    public void onCreate(Bundle savedInstanceState) {  

        super.onCreate(savedInstanceState);

```

```

setContentView(R.layout.search_transactions);

editFromDate = (EditText) this.findViewById(R.id.editFromDate);
editToDate = (EditText) this.findViewById(R.id.editToDate);

editFromAmount = (EditText) this.findViewById(R.id.editFromAmount);
editToAmount = (EditText) this.findViewById(R.id.editToAmount);

// get the current date
final Calendar c = Calendar.getInstance();
fromYear = toYear = c.get(Calendar.YEAR);
fromMonth = toMonth = c.get(Calendar.MONTH);
toDay = c.get(Calendar.DAY_OF_MONTH);

fromDay = 1; // from is set to 1st of the current month

updateToDateDisplay();
updateFromDateDisplay();
}

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    return Utils.inflateMenu(this,menu);
}

@Override
public boolean onOptionsItemSelected(MenuItem item) {
    return Utils.handleMenuOption(this,item);
}

private DatePickerDialog.OnDateSetListener fromDateSetListener =
    new DatePickerDialog.OnDateSetListener() {
        public void onDateSet(DatePicker view, int pYear,int pMonth, int pDay)
        {
            fromYear = pYear;
            fromMonth = pMonth;
            fromDay = pDay;
            updateFromDateDisplay();
        }
    };

private DatePickerDialog.OnDateSetListener toDateSetListener =
    new DatePickerDialog.OnDateSetListener() {
        public void onDateSet(DatePicker view, int pYear,int pMonth, int pDay)
        {
}

```

```

        toYear = pYear;
        toMonth = pMonth;
        toDay = pDay;
        updateToDateDisplay();
    }
}

public void showFromDateDialog(View v) {
    showDialog(FROM_DATE_DIALOG);
}

public void showToDateDialog(View v) {
    showDialog(TO_DATE_DIALOG);
}

@Override
protected Dialog onCreateDialog(int id) {
    switch (id) {
        case FROM_DATE_DIALOG:
            return new DatePickerDialog(this,
                fromDateSetListener, fromYear, fromMonth, fromDay);
        case TO_DATE_DIALOG:
            return new DatePickerDialog(this,
                toDateSetListener, toYear, toMonth, toDay);
    }
    return null;
}

private void updateToDateDisplay() {
    // Month is 0 based so add 1
    editToDate.setText( String.format("%d-%d-%d", toYear,toMonth + 1,toDay));
}

private void updateFromDateDisplay() {
    // Month is 0 based so add 1
    editFromDate.setText( String.format("%d-%d-%d", fromYear,fromMonth +
1,fromDay));
}

public void searchTransactions(View v) {
    Intent intent = new Intent(this, ListTransactions.class);
    intent.putExtra("fromdate", editFromDate.getText().toString());
    intent.putExtra("todate", editToDate.getText().toString());
    intent.putExtra("fromamount", editFromAmount.getText().toString());
    intent.putExtra("toamount", editToAmount.getText().toString());
}

```

```

        startActivity(intent);
    }

    public void clearFields(View v) {

        editFromDate.setText("");
        editToDate.setText("");
        editFromAmount.setText("");
        editToAmount.setText("");
    }

}

```

TransactionDetails.java

```

import android.app.Activity;
import android.app.AlertDialog;
import android.content.DialogInterface;
import android.content.Intent;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.os.Bundle;
import android.util.Log;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.TextView;
import android.widget.Toast;

public class TransactionDetails extends Activity {
    private String transId;
    private String accountId;
    private TextView textAcno;
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.transaction_details);

        transId = this.getIntent().getStringExtra("transid");
        Log.d("Account", "Trans id : " + transId);
    }
}

```

```

textAcno = (TextView) this.findViewById(R.id.textAcno);
TextView textTransDate = (TextView) this.findViewById(R.id.textTransDate);
TextView textTransType = (TextView) this.findViewById(R.id.textTransType);
TextView textTransAmount = (TextView) this.findViewById(R.id.textTransAmount);
TextView textChequeNo = (TextView) this.findViewById(R.id.textChequeNo);
TextView textChequeParty = (TextView) this.findViewById(R.id.textChequeParty);
TextView textChequeDetails = (TextView)
this.findViewById(R.id.textChequeDetails);
TextView textRemarks = (TextView) this.findViewById(R.id.textTransRemarks);

DBHelper dbhelper = new DBHelper(this);
SQLiteDatabase db = dbhelper.getReadableDatabase();
Cursor tran = db.rawQuery("select
acno,account_id,transdate,transamount,transtype,cheque_no,cheque_party,cheque_details,
t.remarks from transactions t inner join accounts a on ( a._id = t.account_id) where
t._id = ?",
new String[] {transId });

if (tran.moveToFirst()) {
    accountId =
tran.getString(tran.getColumnIndex(Database.TRANSACTIONS_ACCOUNT_ID));
    textAcno.setText(
    tran.getString(tran.getColumnIndex(Database.ACCOUNTS_ACNO)));
    textTransDate.setText(
    tran.getString(tran.getColumnIndex(Database.TRANSACTIONS_TRANSDATE)));
    textTransType.setText(
    tran.getString(tran.getColumnIndex(Database.TRANSACTIONS_TRANSTYPE)));
    textTransAmount.setText(
    tran.getString(tran.getColumnIndex(Database.TRANSACTIONS_TRANSAMOUNT)));
    textChequeNo.setText(
    tran.getString(tran.getColumnIndex(Database.TRANSACTIONS_CHEQUE_NO)));
    textChequeParty.setText(
    tran.getString(tran.getColumnIndex(Database.TRANSACTIONS_CHEQUE_PARTY)));
    textChequeDetails.setText(
    tran.getString(tran.getColumnIndex(Database.TRANSACTIONS_CHEQUE_DETAILS)));

    textRemarks.setText(tran.getString(tran.getColumnIndex(Database.TRANSACTIONS_REMARKS)))
};

}
else
    Log.d("Accounts", "No transaction found!");

```

```

        db.close();
        dbhelper.close();
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        return Utils.inflateMenu(this,menu);
    }

    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        return Utils.handleMenuItemOption(this,item);
    }

    public void deleteTransaction(View v) {
        AlertDialog.Builder builder = new AlertDialog.Builder(this);
        builder.setMessage("Are you sure you want to delete this transaction?")
            .setCancelable(false)
            .setPositiveButton("Yes", new DialogInterface.OnClickListener() {
                public void onClick(DialogInterface dialog, int id) {
                    deleteCurrentTransaction();
                }
            })
            .setNegativeButton("No", new DialogInterface.OnClickListener() {
                public void onClick(DialogInterface dialog, int id) {
                    dialog.cancel();
                }
            });
        AlertDialog alert = builder.create();
        alert.show();
    }

    public void deleteCurrentTransaction() {
        try {
            DBHelper dbhelper = new DBHelper(this);
            SQLiteDatabase db = dbhelper.getWritableDatabase();
            int rows = db.delete(Database.TRANSACTIONS_TABLE_NAME, "_id=?", new
String[] { transId});
            dbhelper.close();
            if ( rows == 1) {
                Toast.makeText(this, "Transaction Deleted Successfully!",
Toast.LENGTH_LONG).show();
                this.finish();
            }
        }
    }
}

```

```

        }
    else
        Toast.makeText(this, "Could not delete transaction!",
Toast.LENGTH_LONG).show();
    }
    catch (Exception ex) {
        Toast.makeText(this, ex.getMessage(), Toast.LENGTH_LONG).show();
    }
}

public void showAccountDetails(View v) {
    Intent intent = new Intent(this,UpdateAccount.class);
    intent.putExtra("accountid", accountId);
    startActivity(intent);
}
}

```

UpdateAccount.java

```

import android.app.Activity;
import android.app.AlertDialog;
import android.content.ContentValues;
import android.content.DialogInterface;
import android.content.Intent;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.os.Bundle;
import android.util.Log;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.MenuItem;
import android.view.View;
import android.widget.EditText;
import android.widget.Toast;

public class UpdateAccount extends Activity {
    private String accountId;
    private EditText editAcno, editCno, editHolders, editBankName,
            editBranchName, editAddress, editIFSC, editMICR, editBalance,
            editRemarks;

    @Override

```

```

public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.update_account);
    editAcno = (EditText) this.findViewById(R.id.editAcno);
    editCno = (EditText) this.findViewById(R.id.editCno);
    editHolders = (EditText) this.findViewById(R.id.editHolders);
    editBankName = (EditText) this.findViewById(R.id.editBankName);
    editBranchName = (EditText) this.findViewById(R.id.editBranchName);
    editAddress = (EditText) this.findViewById(R.id.editAddress);
    editIFSC = (EditText) this.findViewById(R.id.editIFSC);
    editMICR = (EditText) this.findViewById(R.id.editMICR);
    editBalance = (EditText) this.findViewById(R.id.editBalance);
    editRemarks = (EditText) this.findViewById(R.id.editRemarks);
}

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    return Utils.inflateMenu(this,menu);
}

@Override
public boolean onOptionsItemSelected(MenuItem item) {
    return Utils.handleMenuOption(this,item);
}

@Override
public void onStart() {
    super.onStart();
    accountId = this.getIntent().getStringExtra("accountid");
    Log.d("Accounts", "Account Id : " + accountId);
    DBHelper dbhelper = new DBHelper(this);
    SQLiteDatabase db = dbhelper.getReadableDatabase();
    Cursor account = db.query(Database.ACCOUNTS_TABLE_NAME, null,
        " _id = ?", new String[] { accountId }, null, null, null);
    //startManagingCursor(accounts);
    if (account.moveToFirst()) {
        // update view
        editAcno.setText(account.getString(account
            .getColumnIndex(Database.ACCOUNTS_ACNO)));
        editCno.setText(account.getString(account
            .getColumnIndex(Database.ACCOUNTS_CNO)));
        editHolders.setText(account.getString(account

```

```

        .getColumnIndex(Database.ACCTS HOLDERS)) );
editBankName.setText(account.getString(account
        .getColumnIndex(Database.ACCTS BANK)) );
editBranchName.setText(account.getString(account
        .getColumnIndex(Database.ACCTS BRANCH)) );
editAddress.setText(account.getString(account
        .getColumnIndex(Database.ACCTS ADDRESS)) );
editIFSC.setText(account.getString(account
        .getColumnIndex(Database.ACCTS IFSC)) );
editMICR.setText(account.getString(account
        .getColumnIndex(Database.ACCTS MICR)) );
editBalance.setText(account.getString(account
        .getColumnIndex(Database.ACCTS BALANCE)) );
editRemarks.setText(account.getString(account
        .getColumnIndex(Database.ACCTS REMARKS)) );
}

account.close();
db.close();
dbhelper.close();

}

public void updateAccount(View v) {
try {
    DBHelper dbhelper = new DBHelper(this);
    SQLiteDatabase db = dbhelper.getWritableDatabase();
    // execute insert command
    ContentValues values = new ContentValues();
    values.put(Database.ACCTS_ACNO, editAcno.getText().toString());
    values.put(Database.ACCTS_CNO, editCno.getText().toString());
    values.put(Database.ACCTS HOLDERS, editHolders.getText()
        .toString());
    values.put(Database.ACCTS_BANK, editBankName.getText()
        .toString());
    values.put(Database.ACCTS_BRANCH, editBranchName.getText()
        .toString());
    values.put(Database.ACCTS_ADDRESS, editAddress.getText()
        .toString());
    values.put(Database.ACCTS_IFSC, editIFSC.getText().toString());
    values.put(Database.ACCTS_MICR, editMICR.getText().toString());
    values.put(Database.ACCTS_BALANCE, editBalance.getText()
        .toString());
    values.put(Database.ACCTS_REMARKS, editRemarks.getText()
        .toString());
}
}

```

```

long rows = db.update(Database.ACCTS_TABLE_NAME, values,
        "_id = ?", new String[] { accountId });

db.close();
if (rows > 0)
    Toast.makeText(this, "Updated Account Successfully!",
            Toast.LENGTH_LONG).show();
else
    Toast.makeText(this, "Sorry! Could not update account!",
            Toast.LENGTH_LONG).show();
} catch (Exception ex) {
    Toast.makeText(this, ex.getMessage(), Toast.LENGTH_LONG).show();
}
}

public void deleteAccount(View v) {
    AlertDialog.Builder builder = new AlertDialog.Builder(this);
    builder.setMessage("Are you sure you want to delete this account?")
        .setCancelable(false)
        .setPositiveButton("Yes", new DialogInterface.OnClickListener() {
            public void onClick(DialogInterface dialog, int id) {
                deleteCurrentAccount();
            }
        })
        .setNegativeButton("No", new DialogInterface.OnClickListener() {
            public void onClick(DialogInterface dialog, int id) {
                dialog.cancel();
            }
        });
    AlertDialog alert = builder.create();
    alert.show();
}

public void deleteCurrentAccount() {
    try {
        DBHelper dbhelper = new DBHelper(this);
        SQLiteDatabase db = dbhelper.getWritableDatabase();
        int rows = db.delete(Database.ACCTS_TABLE_NAME, "_id=?",
                new String[] { accountId });
        dbhelper.close();
        if (rows == 1) {

```

```

        Toast.makeText(this, "Account Deleted Successfully!",
Toast.LENGTH_LONG).show();
        this.finish();
    }
else
    Toast.makeText(this, "Could not delete account!",
Toast.LENGTH_LONG).show();

} catch (Exception ex) {
    Toast.makeText(this, ex.getMessage(), Toast.LENGTH_LONG).show();
}

}

public void listAccountTransactions(View v) {
Intent intent = new Intent(this, ListAccountTransactions.class);
intent.putExtra("accountid", accountId);
startActivity(intent);
}

}

```

Utils.java

```

import android.app.Activity;
import android.content.Intent;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.MenuItem;

public class Utils {

    public static boolean inflateMenu(Activity activity, Menu menu) {
        MenuInflater inflater = activity.getMenuInflater();
        inflater.inflate( R.menu.common_menu, menu);
        return true;
    }

    public static boolean handleMenuItemOption(Activity activity, MenuItem item) {
        Intent intent;
        switch(item.getItemId()) {
            case R.id.optAddAccount :
                intent = new Intent(activity, AddAccount.class);

```

```

        activity.startActivity(intent);
        break;

    case R.id.optAddTransaction :
        intent = new Intent(activity,AddTransaction.class);
        activity.startActivity(intent);
        break;

    case R.id.optSearchTransactions :
        intent = new Intent(activity,SearchTransactions.class);
        activity.startActivity(intent);
        break;

    case R.id.optListAccounts :
        intent = new Intent(activity,ListAccounts.class);
        activity.startActivity(intent);
        break;

    case R.id.optRecentTransactions :
        intent = new Intent(activity,ListRecentTransactions.class);
        activity.startActivity(intent);
        break;
    }

    return true;
}

}

```

listaccounts.xml

```

<?xml version="1.0" encoding="UTF-8" ?>

<LinearLayout android:orientation="vertical" android:layout_height="match_parent"
    android:layout_width="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <ListView android:layout_height="wrap_content" android:layout_width="match_parent"
        android:id="@+id/listAccounts"> </ListView>

    <TextView android:layout_height="wrap_content" android:layout_width="match_parent"
        android:text="Tap on the account to get details!" android:gravity="center"
        android:textStyle="bold" android:textColor="#0000ff"/>

    <LinearLayout android:orientation="horizontal"
        android:layout_height="wrap_content" android:layout_width="match_parent"

```

```

    android:gravity="center">

        <Button android:layout_height="wrap_content"
    android:layout_width="wrap_content" android:id="@+id/btnAddAccount" android:text="Add
    Account" android:onClick="addAccount"/>

        <Button android:layout_height="wrap_content"
    android:layout_width="wrap_content" android:id="@+id/btnAddTransaction"
    android:text="Add Trans" android:onClick="addTransaction"/>

        <Button android:layout_height="wrap_content"
    android:layout_width="wrap_content" android:id="@+id/btnRecentTransactions"
    android:text="Recent Trans" android:onClick="recentTransactions"/>

    </LinearLayout>

</LinearLayout>

```

account.xml

```

<?xml version="1.0" encoding="UTF-8" ?>

<LinearLayout android:orientation="vertical" android:layout_height="match_parent"
    android:layout_width="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

    -<LinearLayout android:orientation="horizontal"
    android:layout_height="wrap_content" android:layout_width="match_parent">

        <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="" android:visibility="invisible" android:id="@+id/textAccountId"/>

        <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="" android:id="@+id/textBank"/>

        <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="-"/>

        <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="" android:id="@+id/textHolder"/>

```

```

-<LinearLayout android:orientation="horizontal"
    android:layout_height="wrap_content" android:layout_width="match_parent"
    android:gravity="right" android:layout_weight="1">

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="balance" android:id="@+id/textBalance"/>

</LinearLayout>

</LinearLayout>

<TextView android:layout_height="wrap_content" android:layout_width="match_parent"
    android:text="" android:height="2dp" android:background="#ffffffff"/>

</LinearLayout>

```

account_transaction.xml

```

<?xml version="1.0" encoding="UTF-8" ?>

<LinearLayout android:orientation="vertical" android:layout_height="match_parent"
    android:layout_width="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

    -<TableLayout android:layout_height="wrap_content"
        android:layout_width="match_parent" android:stretchColumns="2">

        -<TableRow>

            <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
                android:text="" android:visibility="invisible" android:id="@+id/textTransId"/>

            <TextView android:layout_height="wrap_content" android:layout_width="70dp"
                android:text="transdate" android:id="@+id/textTransDate"/>

            <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
                android:text="Dataifdsfsdf dsafsdfsdf sdf fdsaf safdsafdsls"
                android:id="@+id/textTransDetails" android:singleLine="false"
                android:scrollHorizontally="false"/>

            <TextView android:layout_height="wrap_content" android:layout_width="50dp"

```

```

        android:text="Type" android:id="@+id/textTransType" android:gravity="center" />

        <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:text="" android:id="@+id/textAmount" android:gravity="right"
        android:minWidth="70dp" />

    </TableRow>

</TableLayout>

    <TextView android:layout_height="wrap_content" android:layout_width="match_parent"
    android:text="" android:height="2dip" android:background="#ffffffff" />

</LinearLayout>

```

add_transaction.xml

```

<?xml version="1.0" encoding="UTF-8" ?>

<ScrollView android:layout_height="match_parent" android:layout_width="match_parent"
xmlns:android="http://schemas.android.com/apk/res/android">

    <TableLayout android:layout_height="match_parent"
    android:layout_width="match_parent">

        <TableRow>

            <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
            android:text="Account :"/>

            <Spinner android:layout_height="wrap_content" android:layout_width="wrap_content"
            android:prompt="@string/accountsPrompt" android:id="@+id/spinnerAccounts" /> </Spinner>

        </TableRow>

        <TableRow>

            <TextView android:layout_height="wrap_content" android:layout_width="match_parent"
            android:text="Type" />

```

```

<RadioGroup android:layout_height="wrap_content"
    android:layout_width="wrap_content" android:orientation="horizontal">

    <RadioButton android:layout_height="wrap_content"
        android:layout_width="wrap_content" android:text="Deposit"
        android:id="@+id/radioDeposit" android:checked="true"/>

    <RadioButton android:layout_height="wrap_content"
        android:layout_width="wrap_content" android:text="Withdraw"
        android:id="@+id/radioWithdraw"/>

</RadioGroup>

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:text="Date :"/>

    <LinearLayout android:layout_height="wrap_content"
        android:layout_width="wrap_content" android:layout_marginBottom="5dp"
        android:padding="5dp">

        <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
            android:text="sysdate" android:id="@+id/textTransDate"/>

        <ImageButton android:layout_height="20dp" android:layout_width="20dp"
            android:id="@+id/buttonDateDialog" android:onClick="showDateDialog"
            android:src="@mipmap/ic_launcher" android:layout_marginLeft="10dp"> </ImageButton>

    </LinearLayout>

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:text="Amount :"/>

    <EditText android:layout_height="wrap_content" android:layout_width="120dp"

```

```

    android:id="@+id/editTransAmount" android:inputType="numberDecimal">> </EditText>

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Cheque No." />

    <EditText android:layout_height="wrap_content" android:layout_width="120dp"
    android:id="@+id/editChequeNo" android:inputType="number"> </EditText>

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Cheque Party :"/>

    <EditText android:layout_height="wrap_content" android:layout_width="120dp"
    android:id="@+id/editChequeParty" android:inputType="text"> </EditText>

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Cheque Details :"/>

    <EditText android:layout_height="wrap_content" android:layout_width="match_parent"
    android:id="@+id/editChequeDetails" android:inputType="text"> </EditText>

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Remarks " />

    <EditText android:layout_height="wrap_content" android:layout_width="match_parent"

```

```

    android:id="@+id/editRemarks" android:inputType="text" android:layout_weight="1">
</EditText>

</TableRow>

<TableRow>

    <Button android:layout_height="40dp" android:layout_width="wrap_content"
    android:text="Add Transaction" android:id="@+id/buttonAdd"
    android:onClick="addTransaction" > </Button>

</TableRow>

</TableLayout>

</ScrollView>

```

addaccount.xml

```

<?xml version="1.0" encoding="UTF-8" ?>

<ScrollView android:layout_height="match_parent" android:layout_width="match_parent"
xmlns:android="http://schemas.android.com/apk/res/android">

    <TableLayout android:layout_height="match_parent"
    android:layout_width="match_parent">

        <TableRow>

            <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
            android:text="Account Number"/>

            <EditText android:layout_height="wrap_content" android:layout_width="150dp"
            android:inputType="number" android:id="@+id/editAcno">

                <requestFocus/>

            </EditText>

```

```

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Customer Number"/>

    <EditText android:layout_height="wrap_content" android:layout_width="150dp"
    android:inputType="number" android:id="@+id/editCno"> </EditText>

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Account Holder(s)"/>

    <EditText android:layout_height="wrap_content" android:layout_width="match_parent"
    android:inputType="textPersonName" android:id="@+id/editHolders"
    android:layout_weight="1"> </EditText>

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Bank Name "/>

    <EditText android:layout_height="wrap_content" android:layout_width="150dp"
    android:inputType="textPersonName" android:id="@+id/editBankName"> </EditText>

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Branch Name "/>

    <EditText android:layout_height="wrap_content" android:layout_width="150dp"
    android:inputType="textPersonName" android:id="@+id/editBranchName"> </EditText>

```

```

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Branch Address "/>

    <EditText android:layout_height="wrap_content" android:layout_width="match_parent"
    android:inputType="textPostalAddress" android:id="@+id/editAddress"
    android:layout_weight="1"/>

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="IFSC"/>

    <EditText android:layout_height="wrap_content" android:layout_width="150dp"
    android:inputType="number" android:id="@+id/editIFSC"> </EditText>

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="MICR"/>

    <EditText android:layout_height="wrap_content" android:layout_width="150dp"
    android:inputType="number" android:id="@+id/editMICR"> </EditText>

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Current Balance"/>

    <EditText android:layout_height="wrap_content" android:layout_width="150dp"
    android:inputType="numberDecimal" android:id="@+id/editBalance"> </EditText>

```

```

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Remarks " />

    <EditText android:layout_height="wrap_content" android:layout_width="match_parent"
    android:id="@+id/editRemarks" android:layout_weight="1"> </EditText>

</TableRow>

<TableRow>

    <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Add Account" android:id="@+id/buttonAdd" android:onClick="addAccount">
</Button>

</TableRow>

</TableLayout>

</ScrollView>

```

list_account_transactions.xml

```

<?xml version="1.0" encoding="UTF-8" ?>

<LinearLayout android:orientation="vertical" android:layout_height="match_parent"
    android:layout_width="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <TextView android:layout_height="wrap_content" android:layout_width="match_parent"
    android:text="Recent Transactions" android:id="@+id/textTitle"/>

    <TableLayout android:layout_height="wrap_content"
        android:layout_width="match_parent" android:id="@+id/heading"
        android:stretchColumns="1">

```

```

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="60dp"
    android:text="Date" android:gravity="center" android:textStyle="bold"
    android:textColor="#ff0000"/>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Details" android:gravity="center" android:textStyle="bold"
    android:textColor="#ff0000"/>

    <TextView android:layout_height="wrap_content" android:layout_width="50dp"
    android:text="Type" android:gravity="center" android:textStyle="bold"
    android:textColor="#ff0000"/>

    <TextView android:layout_height="wrap_content" android:layout_width="70dp"
    android:text="Amount" android:gravity="center" android:textStyle="bold"
    android:textColor="#ff0000"/>

</TableRow>

</TableLayout>

<ListView android:layout_height="wrap_content" android:layout_width="match_parent"
    android:id="@+id/listTransactions"/>

    <TextView android:layout_height="wrap_content" android:layout_width="match_parent"
    android:text="Sorry! No Transaction Found!" android:id="@+id/textError"
    android:visibility="invisible"/>

</LinearLayout>

```

list_transactions.xml

```

<?xml version="1.0" encoding="UTF-8" ?>

<LinearLayout android:orientation="vertical" android:layout_height="match_parent"
    android:layout_width="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <ListView android:layout_height="wrap_content" android:layout_width="match_parent"
        android:id="@+id/listTransactions"/>

```

```

<TextView android:layout_height="wrap_content" android:layout_width="match_parent"
    android:id="@+id/textError" android:text="Sorry! No Transactions Found!"
    android:visibility="invisible"/>

</LinearLayout>

```

Search_transactions.xml

```

<?xml version="1.0" encoding="UTF-8" ?>

<LinearLayout android:orientation="vertical" android:layout_height="match_parent"
    android:layout_width="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <TableLayout android:layout_height="wrap_content"
        android:layout_width="match_parent"
        xmlns:android="http://schemas.android.com/apk/res/android">

        <TableRow>

            <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
                android:text="From Date :"/>

            <EditText android:layout_height="wrap_content" android:layout_width="120dp"
                android:inputType="date" android:id="@+id/editFromDate">
                <requestFocus/>
            </EditText>

            <ImageButton android:id="@+id/buttonFromDateDialog"
                android:src="@mipmap/ic_launcher" android:onClick="showFromDateDialog"
                android:layout_marginLeft="5dp"/>
        </TableRow>

        <TableRow>

            <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"

```

```

    android:text="To Date :"/>

    <EditText android:layout_height="wrap_content" android:layout_width="120dp"
    android:inputType="date" android:id="@+id/editToDate"/>

    <ImageButton android:id="@+id/buttonToDateDialog"
    android:src="@mipmap/ic_launcher" android:onClick="showToDateDialog"
    android:layout_marginLeft="5dp"/>

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="From Amount :"/>

    <EditText android:layout_height="wrap_content" android:layout_width="120dp"
    android:inputType="numberDecimal" android:id="@+id/editFromAmount"/>

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="To Amount :"/>

    <EditText android:layout_height="wrap_content" android:layout_width="120dp"
    android:inputType="numberDecimal" android:id="@+id/editToAmount"/>

</TableRow>

</TableLayout>

    <LinearLayout android:orientation="horizontal"
    android:layout_height="wrap_content" android:layout_width="match_parent">

        <Button android:layout_height="wrap_content" android:layout_width="80dp"
        android:text="Search" android:id="@+id/btnSearch"
        android:onClick="searchTransactions" /> </Button>

        <Button android:layout_height="wrap_content" android:layout_width="80dp"

```

```

        android:text="Clear" android:id="@+id	btnClear" android:onClick="clearFields" />

    </LinearLayout>

</LinearLayout>

```

Transaction.xml

```

<?xml version="1.0" encoding="UTF-8" ?>

    <LinearLayout android:orientation="vertical" android:layout_height="match_parent"
    android:layout_width="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

        <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:text="" android:visibility="invisible" android:id="@+id/textTransId"/>

        <TableLayout android:layout_height="wrap_content"
        android:layout_width="match_parent" android:stretchColumns="1">

            <TableRow>

                <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
                android:text="Account No." />

                <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
                android:text="acno" android:id="@+id/textAcno" android:layout_marginLeft="5dp"/>

            </TableRow>

            <TableRow>

                <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
                android:text="Trans Date" />

                <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
                android:text="transdate" android:id="@+id/textTransDate"
                android:layout_marginLeft="5dp"/>

            </TableRow>

```

```

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Trans Details" />

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Details" android:id="@+id/textTransDetails"
    android:layout_marginLeft="5dp" android:singleLine="false"
    android:scrollHorizontally="false"/>

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Trans Type"/>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Type" android:id="@+id/textTransType" android:layout_marginLeft="5dp"/>

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Trans Amount"/>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="amount" android:id="@+id/textTransAmount"
    android:layout_marginLeft="5dp"/>

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Remarks " />

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"

```

```

    android:text="remarks" android:id="@+id/textTransRemarks"
    android:layout_marginLeft="5dp"/>

</TableRow>

</TableLayout>

</LinearLayout>

```

Transaction_details.xml

```

<?xml version="1.0" encoding="UTF-8" ?>

<LinearLayout android:orientation="vertical" android:layout_height="match_parent"
    android:layout_width="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

    -<TableLayout android:layout_height="wrap_content"
        android:layout_width="match_parent"
        xmlns:android="http://schemas.android.com/apk/res/android" android:stretchColumns="*">

        -<TableRow>

            <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
                android:text="Delete" android:onClick="deleteTransaction"
                android:id="@+id/buttonDelete"> </Button>

            <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
                android:text="Account Details" android:onClick="showAccountDetails"
                android:id="@+id/buttonAccountDetails"> </Button>

        </TableRow>

    </TableLayout>

    <TableLayout android:layout_height="wrap_content"
        android:layout_width="match_parent" android:stretchColumns="1">

        <TableRow>

```

```

<TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
android:text="Account Number :" android:gravity="right"/>

<TextView android:layout_height="wrap_content" android:layout_width="match_parent"
android:id="@+id/textAcno" android:layout_marginLeft="5dp"> </TextView>

</TableRow>

<TableRow>

<TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
android:text="Trans Date :" android:gravity="right"/>

<TextView android:layout_height="wrap_content" android:layout_width="match_parent"
android:id="@+id/textTransDate" android:layout_marginLeft="5dp"> </TextView>

</TableRow>

<TableRow>

<TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
android:text="Trans Type :" android:gravity="right"/>

<TextView android:layout_height="wrap_content" android:layout_width="match_parent"
android:id="@+id/textTransType" android:layout_marginLeft="5dp"> </TextView>

</TableRow>

<TableRow>

<TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
android:text="Amount :" android:gravity="right"/>

<TextView android:layout_height="wrap_content" android:layout_width="match_parent"
android:id="@+id/textTransAmount" android:layout_marginLeft="5dp"> </TextView>

</TableRow>

<TableRow>

```

```

<TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
android:text="Cheque No :" android:gravity="right"/>

<TextView android:layout_height="wrap_content" android:layout_width="match_parent"
android:id="@+id/textChequeNo" android:layout_marginLeft="5dp"> </TextView>

</TableRow>

<TableRow>

<TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
android:text="Cheque Party :" android:gravity="right"/>

<TextView android:layout_height="wrap_content" android:layout_width="match_parent"
android:id="@+id/textChequeParty" android:layout_marginLeft="5dp"> </TextView>

</TableRow>

<TableRow>

<TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
android:text="Cheque Details :" android:gravity="right"/>

<TextView android:layout_height="wrap_content" android:layout_width="match_parent"
android:id="@+id/textChequeDetails" android:layout_marginLeft="5dp"> </TextView>

</TableRow>

<TableRow>

<TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
android:text="Remarks :" android:gravity="right"/>

<TextView android:layout_height="wrap_content" android:layout_width="match_parent"
android:id="@+id/textTransRemarks" android:layout_marginLeft="5dp"> </TextView>

</TableRow>

</TableLayout>

```

```
</LinearLayout>
```

Update_account.xml

```
<?xml version="1.0" encoding="UTF-8" ?>

<ScrollView android:layout_height="match_parent" android:layout_width="match_parent"
xmlns:android="http://schemas.android.com/apk/res/android">

    <LinearLayout android:layout_height="match_parent"
    android:layout_width="match_parent" android:orientation="vertical">

        -<LinearLayout android:layout_height="wrap_content"
        android:layout_width="match_parent" android:orientation="horizontal"
        android:gravity="center">

            <Button android:layout_height="wrap_content"
            android:layout_width="wrap_content" android:onClick="updateAccount"
            android:text="Update" android:id="@+id/buttonUpdate"> </Button>

            <Button android:layout_height="wrap_content"
            android:layout_width="wrap_content" android:onClick="deleteAccount"
            android:text="Delete" android:id="@+id/buttonDelete"> </Button>

            <Button android:layout_height="wrap_content"
            android:layout_width="wrap_content" android:onClick="listAccountTransactions"
            android:text="Transactions" android:id="@+id/buttonListTrans"> </Button>

        </LinearLayout>

        <TextView android:layout_height="wrap_content"
        android:layout_width="wrap_content" android:text="Account Number"/>

        -<EditText android:layout_height="wrap_content"
        android:layout_width="match_parent" android:id="@+id/editAcno">

            <requestFocus/>

        </EditText>
```

```
<TextView android:layout_height="wrap_content"
    android:layout_width="wrap_content" android:text="Customer Number"/>

    <EditText android:layout_height="wrap_content"
    android:layout_width="match_parent" android:id="@+id/editCno" /> </EditText>

    <TextView android:layout_height="wrap_content"
    android:layout_width="wrap_content" android:text="Account Holder(s)"/>

    <EditText android:layout_height="wrap_content"
    android:layout_width="match_parent" android:id="@+id/editHolders" /> </EditText>

    <TextView android:layout_height="wrap_content"
    android:layout_width="wrap_content" android:text="Bank Name"/>

    <EditText android:layout_height="wrap_content"
    android:layout_width="match_parent" android:id="@+id/editBankName" /> </EditText>

    <TextView android:layout_height="wrap_content"
    android:layout_width="wrap_content" android:text="Branch Name"/>

    <EditText android:layout_height="wrap_content"
    android:layout_width="match_parent" android:id="@+id/editBranchName" /> </EditText>

    <TextView android:layout_height="wrap_content"
    android:layout_width="wrap_content" android:text="Branch Address"/>

    <EditText android:layout_height="wrap_content"
    android:layout_width="match_parent" android:id="@+id/editAddress"
    android:inputType="textPostalAddress" />

    <TextView android:layout_height="wrap_content"
    android:layout_width="wrap_content" android:text="IFSC"/>

    <EditText android:layout_height="wrap_content"
    android:layout_width="match_parent" android:id="@+id/editIFSC" /> </EditText>

    <TextView android:layout_height="wrap_content"
    android:layout_width="wrap_content" android:text="MICR"/>

    <EditText android:layout_height="wrap_content"
    android:layout_width="match_parent" android:id="@+id/editMICR" /> </EditText>
```

```

        <TextView android:layout_height="wrap_content"
        android:layout_width="wrap_content" android:text="Current Balance"/>

        <EditText android:layout_height="wrap_content"
        android:layout_width="match_parent" android:id="@+id/editBalance" /> </EditText>

        <TextView android:layout_height="wrap_content"
        android:layout_width="wrap_content" android:text="Remarks " />

        <EditText android:layout_height="wrap_content"
        android:layout_width="match_parent" android:id="@+id/editRemarks" /> </EditText>

    </LinearLayout>

</ScrollView>

```

Menu

Common_menu.xml

```

<?xml version="1.0" encoding="UTF-8" ?>

<menu xmlns:android="http://schemas.android.com/apk/res/android">

    <item android:title="Add Transaction" android:icon="@mipmap/ic_launcher"
    android:id="@+id/optAddTransaction"/>

    <item android:title="Search Transactions" android:icon="@mipmap/ic_launcher"
    android:id="@+id/optSearchTransactions"/>

    <item android:title="Add Account" android:icon="@mipmap/ic_launcher"
    android:id="@+id/optAddAccount"/>

    <item android:title="List Accounts" android:icon="@mipmap/ic_launcher"
    android:id="@+id/optListAccounts"/>

    <item android:title="Recent Transactions" android:icon="@mipmap/ic_launcher"
    android:id="@+id/optRecentTransactions"/>

</menu>

```

String.xml

```

<resources>
    <string name="app_name">My Application</string>
    <string name="action_settings">Settings</string>
    <string name="accountsPrompt">Select Account</string>

</resources>

```

Manifest.xml

```

<?xml version="1.0" encoding="UTF-8"?>

<manifest package="com.example.manju.myapplication"
xmlns:android="http://schemas.android.com/apk/res/android">

<application android:theme="@style/AppTheme" android:supportsRtl="true"
android:label="@string/app_name" android:icon="@mipmap/ic_launcher"
android:allowBackup="true">

<activity android:theme="@style/AppTheme.NoActionBar" android:label="@string/app_name"
android:name=".ListAccounts">

-<intent-filter>

<action android:name="android.intent.action.MAIN"/>

<category android:name="android.intent.category.LAUNCHER"/>

</intent-filter>

</activity>

<activity android:label="Add New Account" android:name=".AddAccount"/>

<activity android:label="Add New Transaction" android:name=".AddTransaction"/>

<activity android:label="Account Details" android:name=".UpdateAccount"/>

<activity android:label="Account Transactions"
android:name=".ListAccountTransactions"/>

<activity android:label="Transaction Details" android:name=".TransactionDetails"/>

<activity android:label="Search Transactions" android:name=".SearchTransactions"/>

<activity android:label="Recent Transactions" android:name=".ListRecentTransactions"/>

</application>

```

```
</manifest>
```

- Quiz application

SoccerQuizGame.java

```
import android.support.v7.app.AppCompatActivity;

import java.io.IOException;
import java.io.InputStream;
import java.util.*;

import android.os.Bundle;
import android.app.Activity;
import android.app.AlertDialog;
import android.app.AlertDialog.Builder;
import android.content.Context;
import android.content.DialogInterface;
import android.content.res.AssetManager;
import android.graphics.drawable.Drawable;
import android.os.Handler;
import android.util.Log;
import android.view.LayoutInflater;
import android.view.View;
import android.view.View.OnClickListener;
import android.view.Menu;
import android.view.MenuItem;
import android.view.ViewGroup;
import android.view.animation.Animation;
import android.view.animation.AnimationUtils;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.TableLayout;
import android.widget.TableRow;
import android.widget.TextView;

import java.io.IOException;
import java.io.InputStream;
import java.util.*;
```

```

import android.os.Bundle;
import android.app.Activity;
import android.app.AlertDialog;
import android.app.AlertDialog.Builder;
import android.content.Context;
import android.content.DialogInterface;
import android.content.res.AssetManager;
import android.graphics.drawable.Drawable;
import android.os.Handler;
import android.util.Log;
import android.view.LayoutInflater;
import android.view.View;
import android.view.View.OnClickListener;
import android.view.Menu;
import android.view.MenuItem;
import android.view.ViewGroup;
import android.view.animation.Animation;
import android.view.animation.AnimationUtils;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.TableLayout;
import android.widget.TableRow;
import android.widget.TextView;

public class SoccerQuizGame extends AppCompatActivity {

    //String used when logging error messages
    private static final String TAG = "SoccerQuizGame Activity";

    //Instance Variables
    private List<String> fileNameList; // player file names
    private List<String> quizPlayersList; // names of players in quiz
    private String correctAnswer; // current correct answer
    private int totalGuesses; // number of guesses
    private int correctAnswers; // number of correct guesses
    private int guessRows; // number of rows displaying choices
    private Random random; // random number generator
    private Handler handler; // used to delay loading of next player
    private Animation shakeAnimation; // animation for incorrect answers

    private TextView answerTextView;
    private TextView questionNumberTextView;
    private ImageView faceImageView;
    private TableLayout buttonTableLayout;
}

```

```

@Override
public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.main);

    // list of image file names
    fileNameList = new ArrayList<String>();
    quizPlayersList = new ArrayList<String>();
    guessRows = 3;
    random = new Random();
    handler = new Handler();

    // get references to the GUI components
    questionNumberTextView = (TextView)
        findViewById(R.id.questionNumberTextView);
    answerTextView = (TextView) findViewById(R.id.answerTextView);
    faceImageView = (ImageView) findViewById(R.id.faceImageView);
    buttonTableLayout = (TableLayout) findViewById(R.id.buttonTableLayout);

    // set questionNumbers Text
    questionNumberTextView.setText(
        getResources().getString(R.string.question) + " 1 " +
        getResources().getString(R.string.of) + " 10");

    // load the shake animations used to animate incorrect answers
    shakeAnimation = AnimationUtils.loadAnimation(this,
        R.anim.incorrect_shake);
    shakeAnimation.setRepeatCount(3); // animation repeats 3 times

    // start a new quiz
    resetQuiz();
}

// end onCreate method

// set up and start the next quiz
private void resetQuiz(){

    // use the AssetManager to get the player image
    // file names for the app
    AssetManager assets = getAssets();
    fileNameList.clear(); // clear the list
}

```

```

// get list of all player names in this region
String[] paths = null;
try {
    paths = assets.list("Players");
} catch (IOException e) {
    // TODO Auto-generated catch block
    Log.e(TAG, "Error loading ", e);
}

for(String path : paths)
    fileNameList.add(path.replace(".jpg", ""));

correctAnswers = 0; // reset number of correct answers
totalGuesses= 0; // reset number of guesses
quizPlayersList.clear(); // clear prior list of quiz countries

// add 10 random file names to the quiz list
int playerCounter = 1;
int numberOfPlayers = fileNameList.size();

while(playerCounter <= 10) {

    int randomIndex = random.nextInt(numberOfPlayers);

    //get random file name
    String fileName = fileNameList.get(randomIndex);

    //if region is enabled and hasnt been chosen
    if(!quizPlayersList.contains(fileName)) {
        quizPlayersList.add(fileName);
        ++playerCounter;
    }
}

loadNextPlayer(); //start quiz by loading next player
}

// after user guesses a correct player, load the next one
private void loadNextPlayer(){

```

```

//get the filename of the next flag and remove it from the list
String nextImageName = quizPlayersList.remove(0);
correctAnswer = nextImageName; //update correct answer

answerTextView.setText(""); //clear the answerTextView

//display the number of the current question in the quiz
questionNumberTextView.setText(
    getResources().getString(R.string.question) + " " +
    (correctAnswers + 1) + " " +
    getResources().getString(R.string.of) + " 10");

//extract the region from the next images name
String region = "Players";

//use AssetManager to load next image from assets folder
AssetManager assets = getAssets(); // get apps Asset Manager
InputStream stream; // used to read in player names

try{

    //get an InputStream to the asset representing the next flag
    stream = assets.open(region + "/" + nextImageName + ".jpg");

    //load the asset as Drawable and display on the flagImageView
    Drawable flag = Drawable.createFromStream(stream, nextImageName);
    faceImageView.setImageDrawable(flag);

}

catch (IOException e){
    Log.e(TAG, "Error loading " + nextImageName, e);
}

//clear prior answer buttons from tablerows
for (int row = 0; row < buttonTableLayout.getChildCount(); row++)
    ((TableRow) buttonTableLayout.getChildAt(row)).removeAllViews();

Collections.shuffle(fileNameList); //shuffle file names

//put the correct answer at the end of the fileNameList
int correct = fileNameList.indexOf(correctAnswer);
fileNameList.add(fileNameList.remove(correct));

//get a reference to the LayoutInflator Service

```

```

        LayoutInflator inflater = (LayoutInflator)
getSystemService(Context.LAYOUT_INFLATER_SERVICE);

        // add 3, 6, or 9 answer Buttons based on the value of guessRows
        for (int row = 0; row < guessRows; row++) {

            TableRow currentTableRow = getTableRow(row);

            //place Buttons in currentTableRow
            for (int column = 0; column < 3; column++) {

                //inflate guess_button.xml to create new Button
                Button newGuessButton =
                    (Button) inflater.inflate(R.layout.guess_button, null);

                //get player name and set it as newGuessButtons text
                String fileName = fileNameList.get((row * 3) + column);
                newGuessButton.setText(getPlayerName(fileName));

                //register answerButton listener to respond to clicks
                newGuessButton.setOnClickListener(guessButtonListener);
                currentTableRow.addView(newGuessButton);
            }
        }

        //randomly replace one Button with the correct answer
        int row = random.nextInt(guessRows);
        int column = random.nextInt(3);
        TableRow randomTableRow = getTableRow(row);
        String playerName = getPlayerName(correctAnswer);
        ((Button) randomTableRow.getChildAt(column)).setText(playerName);

    } // end loadNextPlayer method

        // return the specified TableRow
    private TableRow getTableRow(int row) {

        return (TableRow) buttonTableLayout.getChildAt(row);
    }

        // parses the player file name and returns the player name

```

```

private String getPlayerName(String name) {

    return name.substring(name.indexOf(' - ') + 1).replace(' - ', ' ');
}

// method submitGuess called when user selects an answer
private void submitGuess (Button guessButton){

    String guess = guessButton.getText().toString();
    String answer = getPlayerName(correctAnswer);
    ++totalGuesses; //increment the number of guesses made

    if (guess.equals(answer)) {

        ++correctAnswers; // increment number of correct answers

        //display Correct answer in answerTextView
        answerTextView.setText(answer + "!" );

        answerTextView.setTextColor(getResources().getColor(R.color.correct_answer));

        disableButtons(); //disable all answer Buttons

        // if user has guessed 10 correct players
        if (correctAnswers == 10){

            //create new AlertDialog Builder
            AlertDialog.Builder builder = new AlertDialog.Builder(this);
            builder.setTitle(R.string.reset_quiz);

            //set the AlertDialogs message to display the game results
            builder.setMessage(String.format("%d %s, %.02f%% %s",
totalGuesses,
                getResources().getString(R.string.guesses) ,
                (1000 / (double) totalGuesses),
                getResources().getString(R.string.correct)));

            builder.setCancelable(false);

            //add reset quiz button
            builder.setPositiveButton(R.string.reset_quiz,
                new DialogInterface.OnClickListener() {

```

```

    @Override
    public void onClick(DialogInterface dialog, int which)
    {

        resetQuiz();
    } // end onClick
} // end anonymous inner class
); //end call to setPositiveButton

// create AlertDialog from the Builder
AlertDialog resetDialog = builder.create();
resetDialog.show();

} // end if

else // answer is correct but game isnt over
{
    //load the next flag after a one second delay
    handler.postDelayed(
        new Runnable()
        {
            @Override
            public void run(){
                loadNextPlayer();
            }
        }, 1000); // 1000 milliseconds for 1 second delay


} // end else
} // end if

else // answer was incorrect
{
    //play the animation
    faceImageView.startAnimation(shakeAnimation);

    //display "Incorrect" in red
    answerTextView.setText(R.string.incorrect_answer);

    answerTextView.setTextColor(getResources().getColor(R.color.incorrect_answer));

    guessButton.setEnabled(false); // disable the incorrect answer
}

```

```

} // end submitGuess method

// method to disable all answer Buttons
private void disableButtons() {

    for (int row = 0; row < buttonTableLayout.getChildCount(); row++) {
        TableRow tablerow = (TableRow) buttonTableLayout.getChildAt(row);

        for(int i = 0; i < tablerow.getChildCount(); i++) {
            tablerow.getChildAt(i).setEnabled(false);
        }
    }
}

// create constants for each menu id
private final int CHOICES_MENU_ID = Menu.FIRST;

// called when the user accesses the options menu
@Override
public boolean onCreateOptionsMenu(Menu menu) {

    super.onCreateOptionsMenu(menu);

    // add options to the menu
    menu.add(Menu.NONE, CHOICES_MENU_ID, Menu.NONE, R.string.choices);

    return true; // display the menu
}

// called when the user selects an option from the menu
@Override
public boolean onOptionsItemSelected(MenuItem item) {

    // switch the menu id of the user selected option
    switch (item.getItemId()) {

        case CHOICES_MENU_ID:
            //create a list of the possible number of answer choices
            final String[] possibleChoices =
                getResources().getStringArray(R.array.guessesList);

```

```

    //create an AlertDialog Builder and set its title
    AlertDialog.Builder choicesBuilder = new
AlertDialog.Builder(this);
    choicesBuilder.setTitle(R.string.choices);

    //add possibleChoices items to the Dialog and set the
    // behavior when one of the items is clicked
    choicesBuilder.setItems(R.array.guessesList,
    new DialogInterface.OnClickListener() {

        @Override
        public void onClick(DialogInterface dialog, int item)

    {

        // update guessRows to reflect user choice
        guessRows =
Integer.parseInt(possibleChoices[item].toString()) / 3;

        resetQuiz();

    }
});

    // create AlertDialog from the Builder
    AlertDialog choicesDialog = choicesBuilder.create();
    choicesDialog.show();

    break;
} // end switch

return super.onOptionsItemSelected(item);

}// end method onOptionsItemSelected

// called when a guess Button is touched
private OnClickListener guessButtonListener = new OnClickListener() {

    @Override
    public void onClick(View v){
        submitGuess((Button) v); // pass selected Button to submitGuess method
    }
}

```

```
};
```

```
} // end SoccerQuizGame
```

main.xml

```
<?xml version="1.0" encoding="UTF-8"?>

<LinearLayout android:orientation="vertical" android:gravity="center_horizontal"
    android:background="@drawable/grass_background" android:layout_height="match_parent"
    android:layout_width="match_parent" android:id="@+id/linearLayout"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <TextView android:gravity="center" android:layout_height="wrap_content"
        android:layout_width="match_parent" android:id="@+id/titleTextView"
        android:textSize="@dimen/title_size" android:textColor="@color/text_color"
        android:text="@string/quiz_title" android:layout_marginBottom="10dp"/>

    <TextView android:gravity="center" android:layout_height="wrap_content"
        android:layout_width="match_parent" android:id="@+id/questionNumberTextView"
        android:layout_gravity="center"/>

    <ImageView android:layout_height="@dimen/face_height"
        android:layout_width="@dimen/face_width" android:id="@+id/faceImageView"
        android:adjustViewBounds="false"/>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:id="@+id/guessPlayerTextView" android:textSize="@dimen/text_size"
        android:textColor="@color/text_color" android:text="@string/guess_player"
        android:layout_marginBottom="10dp"/>

    <TableLayout android:layout_height="wrap_content" android:layout_width="match_parent"
        android:id="@+id/buttonTableLayout" android:stretchColumns="0,1,2"
        android:layout_weight="1">

        <TableRow android:orientation="horizontal" android:layout_height="wrap_content"
            android:layout_width="match_parent" android:id="@+id/tableRow0"> </TableRow>

        <TableRow android:orientation="horizontal" android:layout_height="wrap_content"
            android:layout_width="match_parent" android:id="@+id/tableRow1"> </TableRow>
```

```

<TableRow android:layout_height="wrap_content" android:layout_width="match_parent"
    android:id="@+id/tableRow2"> </TableRow>

</TableLayout>

<TextView android:gravity="center" android:layout_height="wrap_content"
    android:layout_width="match_parent" android:id="@+id/answerTextView"
    android:textSize="@dimen/answer_size" android:layout_gravity="center"
    android:textStyle="bold"/>

</LinearLayout>

```

guess_button.xml

```

<?xml version="1.0" encoding="UTF-8"?>
<Button android:layout_weight="1" android:layout_height="wrap_content"
    android:layout_width="wrap_content" android:id="@+id/newGuessButton"
    xmlns:android="http://schemas.android.com/apk/res/android"> </Button>

```

color.xml

```

<color name="background_color">#FFFFCC</color>

<color name="correct_answer">#FFFFFF</color>

<color name="incorrect_answer">#FF0000</color>

<color name="text_color">#FFFFFF</color>

```

string.xml

```

<string name="hello_world">Hello world!</string>

<string name="menu_settings">Settings</string>

<string name="choices">Select Number of Choices</string>

<string name="correct">correct</string>

<string name="guess_player">Guess the Player</string>

```

```

<string name="guesses">guesses</string>

<string name="incorrect_answer">Wrong!</string>

<string name="of">of</string>

<string name="ok">OK</string>

<string name="question">Question</string>

<string name="quiz_title">Soccer Quiz</string>

<string name="reset_quiz">Reset Quiz</string>

<string-array name="guessesList">

<item>3</item>

<item>6</item>

<item>9</item>

</string-array>

```

dimen.xml

```

<resources>

    <!-- Default screen margins, per the Android Design guidelines. -->
    <dimen name="activity_horizontal_margin">16dp</dimen>
    <dimen name="activity_vertical_margin">16dp</dimen>
    <dimen name="fab_margin">16dp</dimen>
    <dimen name="title_size">25sp</dimen>

    <dimen name="face_width">227dp</dimen>

    <dimen name="face_height">150dp</dimen>

    <dimen name="answer_size">40sp</dimen>

    <dimen name="text_size">20sp</dimen>

    <dimen name="padding_small">8dp</dimen>

```

```
<dimen name="padding_medium">8dp</dimen>

<dimen name="padding_large">16dp</dimen>

</resources>
```

Drawable folder



anim folder

incorrect_shake.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<set android:interpolator="@android:anim/decelerate_interpolator"
      xmlns:android="http://schemas.android.com/apk/res/android"><translate
      android:duration="100" android:toXDelta="-5%p" android:fromXDelta="0"/><translate
      android:duration="100" android:toXDelta="5%p" android:fromXDelta="-5%p"
      android:startOffset="100"/><translate android:duration="100" android:toXDelta="-5%p"
      android:fromXDelta="5%p" android:startOffset="200"/></set>
```

assets folder



PLAYERS PHOTO



- CHAT VIA BLUETOOTH

MainActivity.java

```

import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.view.View;
import android.view.Menu;
import android.view.MenuItem;
import android.app.Activity;
import android.bluetooth.BluetoothAdapter;
import android.bluetooth.BluetoothDevice;
import android.content.Intent;
import android.os.Bundle;
import android.os.Handler;
import android.os.Handler.Callback;
import android.os.Message;
import android.support.v7.app.ActionBar;

import android.view.KeyEvent;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.MenuItem;
import android.view.View;
import android.view.View.OnClickListener;
import android.view.inputmethod.EditorInfo;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.EditText;
import android.widget.ListView;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    public static final int MESSAGE_STATE_CHANGE = 1;
    public static final int MESSAGE_READ = 2;
    public static final int MESSAGE_WRITE = 3;
    public static final int MESSAGE_DEVICE_NAME = 4;
    public static final int MESSAGE_TOAST = 5;

    public static final String DEVICE_NAME = "device_name";
    public static final String TOAST = "toast";
}

```

```

private static final int REQUEST_CONNECT_DEVICE_SECURE = 1;
private static final int REQUEST_CONNECT_DEVICE_INSECURE = 2;
private static final int REQUEST_ENABLE_BT = 3;

private ListView lvMainChat;
private EditText etMain;
private Button btnSend;

private String connectedDeviceName = null;
private ArrayAdapter<String> chatArrayAdapter;

private StringBuffer outStringBuffer;
private BluetoothAdapter bluetoothAdapter = null;
private ChatService chatService = null;

private Handler handler = new Handler(new Callback() {
    @Override
    public boolean handleMessage(Message msg) {
        switch (msg.what) {
            case MESSAGE_STATE_CHANGE:
                switch (msg.arg1) {
                    case ChatService.STATE_CONNECTED:
                        setStatus(getString(R.string.title_connected_to,
                                connectedDeviceName));
                        chatArrayAdapter.clear();
                        break;
                    case ChatService.STATE_CONNECTING:
                        setStatus(R.string.title_connecting);
                        break;
                    case ChatService.STATE_LISTEN:
                    case ChatService.STATE_NONE:
                        setStatus(R.string.title_not_connected);
                        break;
                }
                break;
            case MESSAGE_WRITE:
                byte[] writeBuf = (byte[]) msg.obj;

                String writeMessage = new String(writeBuf);
                chatArrayAdapter.add("Me: " + writeMessage);
                break;
            case MESSAGE_READ:
                byte[] readBuf = (byte[]) msg.obj;

```

```

        String readMessage = new String(readBuf, 0, msg.arg1);
        chatArrayAdapter.add(connectedDeviceName + ":" + 
readMessage);
        break;
    case MESSAGE_DEVICE_NAME:

        connectedDeviceName = msg.getData().getString(DEVICE_NAME);
        Toast.makeText(getApplicationContext(),
                    "Connected to " + connectedDeviceName,
                    Toast.LENGTH_SHORT).show();
        break;
    case MESSAGE_TOAST:

        Toast.makeText(getApplicationContext(),
                    msg.getData().getString(TOAST), Toast.LENGTH_SHORT)
                    .show();
        break;
    }
    return false;
}
});;

@Override
public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    bluetoothAdapter = BluetoothAdapter.getDefaultAdapter();

    getWidgetReferences();
    bindEventHandler();

    if (bluetoothAdapter == null) {
        Toast.makeText(this, "Bluetooth is not available",
                    Toast.LENGTH_LONG).show();
        finish();
        return;
    }
}

private void getWidgetReferences() {
    lvMainChat = (ListView) findViewById(R.id.lvMainChat);
    etMain = (EditText) findViewById(R.id.etMain);
    btnSend = (Button) findViewById(R.id.btnSend);
}

```

```

}

private void bindEventHandler() {
    etMain.setOnEditorActionListener(mWriteListener);

    btnSend.setOnClickListener(new OnClickListener() {
        public void onClick(View v) {
            String message = etMain.getText().toString();
            sendMessage(message);
        }
    });
}

public void onActivityResult(int requestCode, int resultCode, Intent data) {
    switch (requestCode) {
        case REQUEST_CONNECT_DEVICE_SECURE:
            if (resultCode == Activity.RESULT_OK) {
                connectDevice(data, true);
            }
            break;
        case REQUEST_CONNECT_DEVICE_INSECURE:
            if (resultCode == Activity.RESULT_OK) {
                connectDevice(data, false);
            }
            break;
        case REQUEST_ENABLE_BT:
            if (resultCode == Activity.RESULT_OK) {
                setupChat();
            } else {
                Toast.makeText(this, R.string.bt_not_enabled_leaving,
                        Toast.LENGTH_SHORT).show();
                finish();
            }
    }
}

private void connectDevice(Intent data, boolean secure) {
    String address = data.getExtras().getString(
            DeviceListActivity.DEVICE_ADDRESS);
    BluetoothDevice device = bluetoothAdapter.getRemoteDevice(address);
    chatService.connect(device, secure);
}

@Override

```

```

public boolean onCreateOptionsMenu(Menu menu) {
    MenuInflater inflater = getMenuInflater();
    inflater.inflate(R.menu.option_menu, menu);
    return true;
}

@Override
public boolean onOptionsItemSelected(MenuItem item) {
    Intent serverIntent = null;
    switch (item.getItemId()) {
        case R.id.secure_connect_scan:
            serverIntent = new Intent(this, DeviceListActivity.class);
            startActivityForResult(serverIntent,
REQUEST_CONNECT_DEVICE_SECURE);
            return true;
        case R.id.insecure_connect_scan:
            serverIntent = new Intent(this, DeviceListActivity.class);
            startActivityForResult(serverIntent,
REQUEST_CONNECT_DEVICE_INSECURE);
            return true;
        case R.id.discoverable:
            ensureDiscoverable();
            return true;
    }
    return false;
}

private void ensureDiscoverable() {
    if (bluetoothAdapter.getScanMode() !=
BluetoothAdapter.SCAN_MODE_CONNECTABLE_DISCOVERABLE) {
        Intent discoverableIntent = new Intent(
                BluetoothAdapter.ACTION_REQUEST_DISCOVERABLE);
        discoverableIntent.putExtra(
                BluetoothAdapter.EXTRA_DISCOVERABLE_DURATION, 300);
        startActivityForResult(discoverableIntent);
    }
}

private void sendMessage(String message) {
    if (chatService.getState() != ChatService.STATE_CONNECTED) {
        Toast.makeText(this, R.string.not_connected, Toast.LENGTH_SHORT)
                .show();
    }
}

```

```

    if (message.length() > 0) {
        byte[] send = message.getBytes();
        chatService.write(send);

        outStringBuffer.setLength(0);
        etMain.setText(outStringBuffer);
    }
}

private TextView.OnEditorActionListener mWriteListener = new
TextView.OnEditorActionListener() {
    public boolean onEditorAction(TextView view, int actionId,
                                 KeyEvent event) {
        if (actionId == EditorInfo.IME_NULL
            && event.getAction() == KeyEvent.ACTION_UP) {
            String message = view.getText().toString();
            sendMessage(message);
        }
        return true;
    }
};

private final void setStatus(int resId) {
    final ActionBar actionBar = getSupportActionBar();
    actionBar.setSubtitle(resId);
}

private final void setStatus(CharSequence subTitle) {
    final ActionBar actionBar = getSupportActionBar();
    actionBar.setSubtitle(subTitle);
}

private void setupChat() {
    chatArrayAdapter = new ArrayAdapter<String>(this, R.layout.message);
    lvMainChat.setAdapter(chatArrayAdapter);

    chatService = new ChatService(this, handler);

    outStringBuffer = new StringBuffer("");
}
}

@Override
public void onStart() {

```

```

super.onStart();

if (!bluetoothAdapter.isEnabled()) {
    Intent enableIntent = new Intent(
        BluetoothAdapter.ACTION_REQUEST_ENABLE);
    startActivityForResult(enableIntent, REQUEST_ENABLE_BT);
} else {
    if (chatService == null)
        setupChat();
}
}

@Override
public synchronized void onResume() {
    super.onResume();

    if (chatService != null) {
        if (chatService.getState() == ChatService.STATE_NONE) {
            chatService.start();
        }
    }
}

@Override
public synchronized void onPause() {
    super.onPause();
}

@Override
public void onStop() {
    super.onStop();
}

@Override
public void onDestroy() {
    super.onDestroy();
    if (chatService != null)
        chatService.stop();
}
}

```

DeviceListActivity

```

import java.util.Set;
import android.app.Activity;
import android.bluetooth.BluetoothAdapter;
import android.bluetooth.BluetoothDevice;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.IntentFilter;
import android.os.Bundle;
import android.view.View;
import android.view.View.OnClickListener;
import android.view.Window;
import android.widget.AdapterView;
import android.widget.AdapterView.OnItemClickListener;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.ListView;
import android.widget.TextView;

public class DeviceListActivity extends Activity {

    private TextView tvDeviceListPairedDeviceTitle, tvDeviceListNewDeviceTitle;
    private ListView lvDeviceListPairedDevice, lvDeviceListNewDevice;
    private Button btnDeviceListScan;

    private BluetoothAdapter bluetoothAdapter;
    private ArrayAdapter<String> pairedDevicesArrayAdapter;
    private ArrayAdapter<String> newDevicesArrayAdapter;

    public static String DEVICE_ADDRESS = "deviceAddress";

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        requestWindowFeature(Window.FEATURE_INDETERMINATE_PROGRESS);
        setContentView(R.layout.device_list);

        setResult(Activity.RESULT_CANCELED);

        getWidgetReferences();
        bindEventHandler();
        initializeValues();
    }
}

```

```

}

private void getWidgetReferences() {
    tvDeviceListPairedDeviceTitle = (TextView)
findViewById(R.id.tvDeviceListPairedDeviceTitle);
    tvDeviceListNewDeviceTitle = (TextView)
findViewById(R.id.tvDeviceListNewDeviceTitle);

    lvDeviceListPairedDevice = (ListView)
findViewById(R.id.lvDeviceListPairedDevice);
    lvDeviceListNewDevice = (ListView) findViewById(R.id.lvDeviceListNewDevice);

    btnDeviceListScan = (Button) findViewById(R.id.btnDeviceListScan);
}

private void bindEventHandler() {
    lvDeviceListPairedDevice.setOnItemClickListener(mDeviceClickListener);
    lvDeviceListNewDevice.setOnItemClickListener(mDeviceClickListener);

    btnDeviceListScan.setOnClickListener(new OnClickListener() {
        public void onClick(View v) {
            startDiscovery();
            btnDeviceListScan.setVisibility(View.GONE);
        }
    });
}

private void initializeValues() {
    pairedDevicesArrayAdapter = new ArrayAdapter<String>(this,
        R.layout.device_name);
    newDevicesArrayAdapter = new ArrayAdapter<String>(this,
        R.layout.device_name);

    lvDeviceListPairedDevice.setAdapter(pairedDevicesArrayAdapter);
    lvDeviceListNewDevice.setAdapter(newDevicesArrayAdapter);

    // Register for broadcasts when a device is discovered
    IntentFilter filter = new IntentFilter(BluetoothDevice.ACTION_FOUND);
    registerReceiver(discoveryFinishReceiver, filter);

    // Register for broadcasts when discovery has finished
    filter = new IntentFilter(BluetoothAdapter.ACTION_DISCOVERY_FINISHED);
    registerReceiver(discoveryFinishReceiver, filter);
}

```

```

bluetoothAdapter = BluetoothAdapter.getDefaultAdapter();
Set<BluetoothDevice> pairedDevices = bluetoothAdapter
    .getBondedDevices();

// If there are paired devices, add each one to the ArrayAdapter
if (pairedDevices.size() > 0) {
    tvDeviceListPairedDeviceTitle.setVisibility(View.VISIBLE);
    for (BluetoothDevice device : pairedDevices) {
        pairedDevicesArrayAdapter.add(device.getName() + "\n"
            + device.getAddress());
    }
} else {
    String noDevices = getResources().getText(R.string.none_paired)
        .toString();
    pairedDevicesArrayAdapter.add(noDevices);
}
}

private void startDiscovery() {
    setProgressBarIndeterminateVisibility(true);
    setTitle(R.string.scanning);

    tvDeviceListNewDeviceTitle.setVisibility(View.VISIBLE);

    if (bluetoothAdapter.isDiscovering()) {
        bluetoothAdapter.cancelDiscovery();
    }

    bluetoothAdapter.startDiscovery();
}

private OnItemClickListener mDeviceClickListener = new OnItemClickListener() {
    public void onItemClick(AdapterView<?> av, View v, int arg2, long arg3) {
        bluetoothAdapter.cancelDiscovery();

        String info = ((TextView) v).getText().toString();
        String address = info.substring(info.length() - 17);

        Intent intent = new Intent();
        intent.putExtra(DEVICE_ADDRESS, address);

        setResult(Activity.RESULT_OK, intent);
        finish();
    }
}

```

```

        }
    } ;

    private final BroadcastReceiver discoveryFinishReceiver = new BroadcastReceiver()
    {

        @Override
        public void onReceive(Context context, Intent intent) {
            String action = intent.getAction();

            if (BluetoothDevice.ACTION_FOUND.equals(action)) {
                BluetoothDevice device = intent
                        .getParcelableExtra(BluetoothDevice.EXTRA_DEVICE);
                if (device.getBondState() != BluetoothDevice.BOND_BONDED) {
                    newDevicesArrayAdapter.add(device.getName() + "\n"
                            + device.getAddress());
                }
            } else if (BluetoothAdapter.ACTION_DISCOVERY_FINISHED
                    .equals(action)) {
                setProgressBarIndeterminateVisibility(false);
                setTitle(R.string.select_device);
                if (newDevicesArrayAdapter.getCount() == 0) {
                    String noDevices = getResources().getText(
                            R.string.none_found).toString();
                    newDevicesArrayAdapter.add(noDevices);
                }
            }
        }
    };

    @Override
    protected void onDestroy() {
        super.onDestroy();

        if (bluetoothAdapter != null) {
            bluetoothAdapter.cancelDiscovery();
        }
        this.unregisterReceiver(discoveryFinishReceiver);
    }

}

```

ChatService

```

import java.io.IOException;
import java.io.InputStream;
import java.io.OutputStream;
import java.util.UUID;

import android.bluetooth.BluetoothAdapter;
import android.bluetooth.BluetoothDevice;
import android.bluetooth.BluetoothServerSocket;
import android.bluetooth.BluetoothSocket;
import android.content.Context;
import android.os.Bundle;
import android.os.Handler;
import android.os.Message;

public class ChatService {
    private static final String NAME_SECURE = "BluetoothChatSecure";
    private static final String NAME_INSECURE = "BluetoothChatInsecure";

    // Unique UUID for this application
    private static final UUID MY_UUID_SECURE = UUID
        .fromString("fa87c0d0-afac-11de-8a39-0800200c9a66");
    private static final UUID MY_UUID_INSECURE = UUID
        .fromString("8ce255c0-200a-11e0-ac64-0800200c9a66");

    // Member fields
    private final BluetoothAdapter bluetoothAdapter;
    private final Handler handler;
    private AcceptThread secureAcceptThread;
    private AcceptThread insecureAcceptThread;
    private ConnectThread connectThread;
    private ConnectedThread connectedThread;
    private int state;

    // Constants that indicate the current connection state
    public static final int STATE_NONE = 0;
    public static final int STATE_LISTEN = 1; // listening connection
    public static final int STATE_CONNECTING = 2; // initiate outgoing
    // connection
    public static final int STATE_CONNECTED = 3; // connected to remote device

    public ChatService(Context context, Handler handler) {
        bluetoothAdapter = BluetoothAdapter.getDefaultAdapter();
        state = STATE_NONE;
    }
}

```

```

    this.handler = handler;
}

// Set the current state of the chat connection
private synchronized void setState(int state) {
    this.state = state;

    handler.obtainMessage(MainActivity.MESSAGE_STATE_CHANGE, state, -1)
        .sendToTarget();
}

// get current connection state
public synchronized int getState() {
    return state;
}

// start service
public synchronized void start() {
    // Cancel any thread
    if (connectThread != null) {
        connectThread.cancel();
        connectThread = null;
    }

    // Cancel any running thred
    if (connectedThread != null) {
        connectedThread.cancel();
        connectedThread = null;
    }

    setState(STATE_LISTEN);

    // Start the thread to listen on a BluetoothServerSocket
    if (secureAcceptThread == null) {
        secureAcceptThread = new AcceptThread(true);
        secureAcceptThread.start();
    }
    if (insecureAcceptThread == null) {
        insecureAcceptThread = new AcceptThread(false);
        insecureAcceptThread.start();
    }
}

// initiate connection to remote device

```

```

public synchronized void connect(BluetoothDevice device, boolean secure) {
    // Cancel any thread
    if (state == STATE_CONNECTING) {
        if (connectThread != null) {
            connectThread.cancel();
            connectThread = null;
        }
    }

    // Cancel running thread
    if (connectedThread != null) {
        connectedThread.cancel();
        connectedThread = null;
    }

    // Start the thread to connect with the given device
    connectThread = new ConnectThread(device, secure);
    connectThread.start();
    setState(STATE_CONNECTING);
}

// manage Bluetooth connection
public synchronized void connected(BluetoothSocket socket,
                                  BluetoothDevice device, final String
socketType) {
    // Cancel the thread
    if (connectThread != null) {
        connectThread.cancel();
        connectThread = null;
    }

    // Cancel running thread
    if (connectedThread != null) {
        connectedThread.cancel();
        connectedThread = null;
    }

    if (secureAcceptThread != null) {
        secureAcceptThread.cancel();
        secureAcceptThread = null;
    }
    if (insecureAcceptThread != null) {
        insecureAcceptThread.cancel();
        insecureAcceptThread = null;
    }
}

```

```

    }

    // Start the thread to manage the connection and perform transmissions
    connectedThread = new ConnectedThread(socket, socketType);
    connectedThread.start();

    // Send the name of the connected device back to the UI Activity
    Message msg = handler.obtainMessage(MainActivity.MESSAGE_DEVICE_NAME);
    Bundle bundle = new Bundle();
    bundle.putString(MainActivity.DEVICE_NAME, device.getName());
    msg.setData(bundle);
    handler.sendMessage(msg);

    setState(STATE_CONNECTED);
}

// stop all threads
public synchronized void stop() {
    if (connectThread != null) {
        connectThread.cancel();
        connectThread = null;
    }

    if (connectedThread != null) {
        connectedThread.cancel();
        connectedThread = null;
    }

    if (secureAcceptThread != null) {
        secureAcceptThread.cancel();
        secureAcceptThread = null;
    }

    if (insecureAcceptThread != null) {
        insecureAcceptThread.cancel();
        insecureAcceptThread = null;
    }
    setState(STATE_NONE);
}

public void write(byte[] out) {
    ConnectedThread r;
    synchronized (this) {
        if (state != STATE_CONNECTED)

```

```

        return;
    r = connectedThread;
}
r.write(out);
}

private void connectionFailed() {
    Message msg = handler.obtainMessage(MainActivity.MESSAGE_TOAST);
    Bundle bundle = new Bundle();
    bundle.putString(MainActivity.TOAST, "Unable to connect device");
    msg.setData(bundle);
    handler.sendMessage(msg);

    // Start the service over to restart listening mode
    ChatService.this.start();
}

private void connectionLost() {
    Message msg = handler.obtainMessage(MainActivity.MESSAGE_TOAST);
    Bundle bundle = new Bundle();
    bundle.putString(MainActivity.TOAST, "Device connection was lost");
    msg.setData(bundle);
    handler.sendMessage(msg);

    // Start the service over to restart listening mode
    ChatService.this.start();
}

// runs while listening for incoming connections
private class AcceptThread extends Thread {
    private final BluetoothServerSocket serverSocket;
    private String socketType;

    public AcceptThread(boolean secure) {
        BluetoothServerSocket tmp = null;
        socketType = secure ? "Secure" : "Insecure";

        try {
            if (secure) {
                tmp = bluetoothAdapter.listenUsingRfcommWithServiceRecord(
                    NAME_SECURE, MY_UUID_SECURE);
            } else {
                tmp = bluetoothAdapter
                    .listenUsingInsecureRfcommWithServiceRecord(

```

```

        NAME_INSECURE, MY_UUID_INSECURE) ;
    }
} catch (IOException e) {
}
serverSocket = tmp;
}

public void run() {
    setName("AcceptThread" + socketType);

    BluetoothSocket socket = null;

    while (state != STATE_CONNECTED) {
        try {
            socket = serverSocket.accept();
        } catch (IOException e) {
            break;
        }

        // If a connection was accepted
        if (socket != null) {
            synchronized (ChatService.this) {
                switch (state) {
                    case STATE_LISTEN:
                    case STATE_CONNECTING:
                        // start the connected thread.
                        connected(socket, socket.getRemoteDevice(),
                                  socketType);
                        break;
                    case STATE_NONE:
                    case STATE_CONNECTED:
                        // Either not ready or already connected. Terminate
                        // new socket.
                        try {
                            socket.close();
                        } catch (IOException e) {
                        }
                        break;
                }
            }
        }
    }
}

```

```

public void cancel() {
    try {
        serverSocket.close();
    } catch (IOException e) {
    }
}
}

// runs while attempting to make an outgoing connection
private class ConnectThread extends Thread {
    private final BluetoothSocket socket;
    private final BluetoothDevice device;
    private String socketType;

    public ConnectThread(BluetoothDevice device, boolean secure) {
        this.device = device;
        BluetoothSocket tmp = null;
        socketType = secure ? "Secure" : "Insecure";

        try {
            if (secure) {
                tmp = device
                    .createRfcommSocketToServiceRecord(MY_UUID_SECURE);
            } else {
                tmp = device
                    .createInsecureRfcommSocketToServiceRecord(MY_UUID_INSECURE);
            }
        } catch (IOException e) {
        }
        socket = tmp;
    }

    public void run() {
        setName("ConnectThread" + socketType);

        // Always cancel discovery because it will slow down a connection
        bluetoothAdapter.cancelDiscovery();

        // Make a connection to the BluetoothSocket
        try {
            socket.connect();
        } catch (IOException e) {
            try {

```

```

        socket.close();
    } catch (IOException e) {
    }
    connectionFailed();
    return;
}

// Reset the ConnectThread because we're done
synchronized (ChatService.this) {
    connectThread = null;
}

// Start the connected thread
connected(socket, device, socketType);
}

public void cancel() {
    try {
        socket.close();
    } catch (IOException e) {
    }
}
}

// runs during a connection with a remote device
private class ConnectedThread extends Thread {
    private final BluetoothSocket bluetoothSocket;
    private final InputStream inputStream;
    private final OutputStream outputStream;

    public ConnectedThread(BluetoothSocket socket, String socketType) {
        this.bluetoothSocket = socket;
        InputStream tmpIn = null;
        OutputStream tmpOut = null;

        try {
            tmpIn = socket.getInputStream();
            tmpOut = socket.getOutputStream();
        } catch (IOException e) {
        }

        inputStream = tmpIn;
        outputStream = tmpOut;
    }
}

```

```

public void run() {
    byte[] buffer = new byte[1024];
    int bytes;

    // Keep listening to the InputStream
    while (true) {
        try {
            // Read from the InputStream
            bytes = inputStream.read(buffer);

            // Send the obtained bytes to the UI Activity
            handler.obtainMessage(MainActivity.MESSAGE_READ, bytes, -1,
                buffer).sendToTarget();
        } catch (IOException e) {
            connectionLost();
            // Start the service over to restart listening mode
            ChatService.this.start();
            break;
        }
    }
}

// write to OutputStream
public void write(byte[] buffer) {
    try {
        outputStream.write(buffer);
        handler.obtainMessage(MainActivity.MESSAGE_WRITE, -1, -1,
            buffer).sendToTarget();
    } catch (IOException e) {
    }
}

public void cancel() {
    try {
        bluetoothSocket.close();
    } catch (IOException e) {
    }
}
}

```

activity_main.xml

```

<?xml version="1.0" encoding="UTF-8"?>

<LinearLayout android:orientation="vertical" android:layout_height="match_parent"
    android:layout_width="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <ListView android:layout_height="0dp" android:layout_width="match_parent"
        android:transcriptMode="alwaysScroll" android:stackFromBottom="true"
        android:divider="@null" android:layout_weight="1" android:id="@+id/lvMainChat"/>

    -<LinearLayout android:orientation="horizontal"
        android:layout_height="wrap_content" android:layout_width="match_parent">

        <EditText android:layout_height="wrap_content" android:layout_width="0dp"
            android:layout_weight="1" android:id="@+id/etMain" android:inputType="none"
            android:layout_gravity="bottom"/>

        <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
            android:id="@+id/btnSend" android:text="@string/send"/>

    </LinearLayout>

</LinearLayout>

```

device_list.xml

```

<?xml version="1.0" encoding="UTF-8"?>

<LinearLayout android:orientation="vertical" android:layout_height="match_parent"
    android:layout_width="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <TextView android:layout_height="wrap_content" android:layout_width="match_parent"
        android:visibility="gone" android:textColor="#fff"
        android:text="@string/title_paired_devices" android:paddingLeft="5dp"
        android:background="#666" android:id="@+id/tvDeviceListPairedDeviceTitle"/>

    <ListView android:layout_height="wrap_content" android:layout_width="match_parent"
        android:id="@+id/lvDeviceListPairedDevice" android:stackFromBottom="true"
        android:layout_weight="1"/>

    <TextView android:layout_height="wrap_content" android:layout_width="match_parent"

```

```

    android:visibility="gone" android:textColor="#fff"
    android:text="@string/title_other_devices" android:paddingLeft="5dp"
    android:background="#666" android:id="@+id/tvDeviceListNewDeviceTitle"/>

    <ListView android:layout_height="wrap_content" android:layout_width="match_parent"
    android:id="@+id/lvDeviceListNewDevice" android:stackFromBottom="true"
    android:layout_weight="2"/>

    <Button android:layout_height="wrap_content" android:layout_width="match_parent"
    android:text="@string/button_scan" android:id="@+id/btnDeviceListScan"/>

</LinearLayout>

```

device_name.xml

```

<?xml version="1.0" encoding="UTF-8"?>
<TextView android:textSize="18sp" android:padding="5dp"
    android:layout_height="wrap_content" android:layout_width="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android"/>

```

message.xml

```

<?xml version="1.0" encoding="UTF-8"?>
<TextView android:textSize="18sp" android:padding="5dp"
    android:layout_height="wrap_content" android:layout_width="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android"/>

```

MENU

option_menu.xml

```

<?xml version="1.0" encoding="UTF-8"?>

<menu xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <item android:title="@string/secure_connect"
        android:showAsAction="ifRoom|withText" android:icon="@android:drawable/ic_menu_search"
        android:id="@+id/secure_connect_scan"
        tools:ignore="AppCompatResource" />

    <item android:title="@string/insecure_connect"

```

```

    android:showAsAction="ifRoom|withText" android:icon="@android:drawable/ic_menu_search"
    android:id="@+id/insecure_connect_scan"
    tools:ignore="AppCompatResource" />

    <item android:title="@string/discoverable" android:showAsAction="ifRoom|withText"
    android:icon="@android:drawable/ic_menu_mylocation" android:id="@+id/discoverable"
    tools:ignore="AppCompatResource" />

</menu>

```

string.xml

```

<resources xmlns:xliff="http://schemas.android.com/tools">
    <string name="app_name">My Application</string>
    <string name="action_settings">Settings</string>

    <string name="send">Send</string>

    <string name="not_connected">You are not connected to a device</string>

    <string name="bt_not_enabled_leaving">Bluetooth was not enabled. Leaving Bluetooth
    Chat.</string>

    <string name="title_connecting">Connecting...</string>

    <string name="title_connected_to">
        Connected to
        <xliff:g id="device_name">%1$s</xliff:g>
    </string>

    <string name="title_not_connected">Not connected</string>

    <string name="scanning">Scanning for devices...</string>

    <string name="select_device">select a device to connect</string>

    <string name="none_paired">No devices have been paired</string>

    <string name="none_found">No devices found</string>

    <string name="title_paired_devices">Paired Devices</string>

```

```

<string name="title_other_devices">Other Available Devices</string>

<string name="button_scan">Scan for devices</string>

<string name="secure_connect">Connect a device - Secure</string>

<string name="insecure_connect">Connect a device - Insecure</string>

<string name="discoverable">Make discoverable</string>

</resources>

```

Manifest.xml

```

<?xml version="1.0" ?>

    <manifest android:versionName="1.0" android:versionCode="1"
package="com.example.manju.myapplication"
xmlns:android="http://schemas.android.com/apk/res/android">

        <uses-sdk android:targetSdkVersion="21" android:minSdkVersion="10"/>

        <uses-permission android:name="android.permission.BLUETOOTH"/>

        <uses-permission android:name="android.permission.BLUETOOTH_ADMIN"/>

        <application android:theme="@style/AppTheme" android:label="@string/app_name"
android:icon="@mipmap/ic_launcher" android:allowBackup="true">

            <activity android:name=".MainActivity" android:label="@string/app_name"
android:screenOrientation="portrait">

                <intent-filter>

                    <action android:name="android.intent.action.MAIN"/>

                    <category android:name="android.intent.category.LAUNCHER"/>

                </intent-filter>

```

```

</activity>

<activity android:name=".DeviceListActivity"
    android:theme="@android:style/Theme.Dialog" android:label="@string/select_device"
    android:screenOrientation="portrait"/>

</application>

</manifest>

```

- **Contacts View**

ContactsView.java

```

import android.app.Activity;
import android.database.Cursor;
import android.net.Uri;
import android.os.Bundle;
import android.provider.ContactsContract;
import android.widget.TextView;

public class ContactsView extends Activity {
    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);
        TextView contactView = (TextView) findViewById(R.id.contactview);

        Cursor cursor = getContacts();

        while (cursor.moveToNext()) {

            String displayName = cursor.getString(cursor
                    .getColumnIndex(ContactsContract.Data.DISPLAY_NAME));
            contactView.append("Name: ");
            contactView.append(displayName);
            contactView.append("\n");
        }
        // Closing the cursor
    }
}

```

```

        cursor.close();
    }

private Cursor getContacts() {
    // Run query
    Uri uri = ContactsContract.Contacts.CONTENT_URI;
    String[] projection = new String[] { ContactsContract.Contacts._ID,
        ContactsContract.Contacts.DISPLAY_NAME };
    String selection = ContactsContract.Contacts.IN_VISIBLE_GROUP + " = ''"
        + ("1") + "'";
    String[] selectionArgs = null;
    String sortOrder = ContactsContract.Contacts.DISPLAY_NAME
        + " COLLATE LOCALIZED ASC";
    return getContentResolver().query(uri, projection, selection,
        selectionArgs, sortOrder);
}

}

```

main.xml

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent">

<TextView
    android:layout_width="fill_parent"
    android:layout_height="fill_parent" android:id="@+id/contactview"/>
</LinearLayout>

```

Android manifest.xml

```
<uses-permission android:name="android.permission.READ_CONTACTS"/>
```

- WEB PAGE Download and save in SD CARD

MainActivity.java:

```

import android.os.Bundle;

import android.support.v7.app.AppCompatActivity;

import android.app.Activity;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.os.Handler;
import android.os.Message;
import android.os.Messenger;
import android.view.View;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    private Handler handler = new Handler() {
        public void handleMessage(Message message) {
            Bundle data = message.getData();
            if (message.arg1 == RESULT_OK && data != null) {

                String path = data.getString("absolutePath");
                Toast.makeText(MainActivity.this, "Downloaded" + path,
                        Toast.LENGTH_LONG).show();
            } else {
                Toast.makeText(MainActivity.this, "Download failed.",
                        Toast.LENGTH_LONG).show();
            }
        };
    };

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

    }

    public void onClick(View view) {
        Intent intent = new Intent(this, DownloadService.class);
        // Create a new Messenger for the communication back
        Messenger messenger = new Messenger(handler);
    }
}

```

```

        intent.putExtra("MESSENGER", messenger);
        intent.setData(Uri.parse("http://www.vogella.de/index.html"));
        intent.putExtra("urlpath", "http://www.vogella.de/index.html");
        startService(intent);
    }

    public void showToast(View view) {
        Toast.makeText(this, "Still interactive", Toast.LENGTH_SHORT).show();
    }
}

```

DownloadService.java

```

import java.io.File;
import java.io.FileOutputStream;
import java.io.IOException;
import java.io.InputStream;
import java.io.InputStreamReader;
import java.net.URL;

import android.app.Activity;
import android.app.IntentService;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.os.Environment;
import android.os.Message;
import android.os.Messenger;
import android.util.Log;

public class DownloadService extends IntentService {

    private int result = Activity.RESULT_CANCELED;

    public DownloadService() {
        super("DownloadService");
    }

    // Will be called asynchronously by Android
    @Override
    protected void onHandleIntent(Intent intent) {

        try {

```

```

        Thread.sleep(4000);
    } catch (InterruptedException e2) {
        e2.printStackTrace();
    }

    Uri data = intent.getData();
    String urlPath = intent.getStringExtra("urlpath");
    String fileName = data.getLastPathSegment();
    File output = new File(Environment.getExternalStorageDirectory(),
                           fileName);
    if (output.exists()) {
        output.delete();
    }

    InputStream stream = null;
    FileOutputStream fos = null;
    try {

        URL url = new URL(urlPath);
        stream = url.openConnection().getInputStream();
        InputStreamReader reader = new InputStreamReader(stream);
        fos = new FileOutputStream(output.getPath());
        int next = -1;
        while ((next = reader.read()) != -1) {
            fos.write(next);
        }
        // Sucessful finished
        result = Activity.RESULT_OK;

    } catch (Exception e) {
        e.printStackTrace();
    } finally {
        if (stream != null) {
            try {
                stream.close();
            } catch (IOException e) {
                e.printStackTrace();
            }
        }
        if (fos != null) {
            try {
                fos.close();
            } catch (IOException e) {
                e.printStackTrace();
            }
        }
    }
}

```

```

        }

    }

    Bundle extras = intent.getExtras();
    if (extras != null) {
        Messenger messenger = (Messenger) extras.get("MESSENGER");
        Message msg = Message.obtain();
        msg.arg1 = result;
        Bundle bundle = new Bundle();
        bundle.putString("absolutePath", output.getAbsolutePath());
        msg.setData(bundle);
        try {
            messenger.send(msg);
        } catch (android.os.RemoteException e1) {
            Log.w(getClass().getName(), "Exception sending message", e1);
        }
    }
}

```

WrongDownloadService.java

```

import java.io.File;
import java.io.FileOutputStream;
import java.io.IOException;
import java.io.InputStream;
import java.io.InputStreamReader;
import java.net.URL;

import android.app.Activity;
import android.app.Service;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.os.Environment;
import android.os.IBinder;
import android.os.Message;
import android.os.Messenger;
import android.os.StrictMode;
import android.util.Log;

public class WrongDownloadService extends Service {

```

```

private int result = Activity.RESULT_CANCELED;

public WrongDownloadService() {
    super();
}

// Runs in the main user interface thread
@Override
public int onStartCommand(Intent intent, int flags, int startId) {
    // Don't do this
    // This will run in the main thread
    StrictMode.ThreadPolicy policy = new StrictMode.ThreadPolicy.Builder()
        .permitAll().build();
    StrictMode.setThreadPolicy(policy);
    try {
        Thread.sleep(4000);
    } catch (InterruptedException e2) {
        e2.printStackTrace();
    }
    Uri data = intent.getData();
    String urlPath = intent.getStringExtra("urlpath");
    String fileName = data.getLastPathSegment();
    File output = new File(Environment.getExternalStorageDirectory(),
        fileName);
    if (output.exists()) {
        output.delete();
    }

    InputStream stream = null;
    FileOutputStream fos = null;
    try {

        URL url = new URL(urlPath);
        stream = url.openConnection().getInputStream();
        InputStreamReader reader = new InputStreamReader(stream);
        fos = new FileOutputStream(output.getPath());
        int next = -1;
        while ((next = reader.read()) != -1) {
            fos.write(next);
        }
        // Successful finished
        result = Activity.RESULT_OK;
    } finally {
        if (fos != null)
            fos.close();
    }
}

```

```

    } catch (Exception e) {
        e.printStackTrace();
    } finally {
        if (stream != null) {
            try {
                stream.close();
            } catch (IOException e) {
                e.printStackTrace();
            }
        }
        if (fos != null) {
            try {
                fos.close();
            } catch (IOException e) {
                e.printStackTrace();
            }
        }
    }
}

Bundle extras = intent.getExtras();
if (extras != null) {
    Messenger messenger = (Messenger) extras.get("MESSENGER");

    Message msg = Message.obtain();
    msg.arg1 = result;
    Bundle bundle = new Bundle();
    bundle.putString("absolutePath", output.getAbsolutePath());
    msg.setData(bundle);
    try {
        messenger.send(msg);
    } catch (android.os.RemoteException e1) {
        Log.w(getClass().getName(), "Exception sending message", e1);
    }
}

return Service.START_NOT_STICKY;
}

@Override
public IBinder onBind(Intent intent) {
    return null;
}
}

```

activity_main.xml

```
<?xml version="1.0" encoding="UTF-8"?>

<LinearLayout android:orientation="vertical" android:layout_height="fill_parent"
    android:layout_width="fill_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:text="Start Service" android:onClick="onClick"
        android:id="@+id/startService"/>

    <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:text="Start IntentService" android:onClick="onClick"
        android:id="@+id/startIntentService"/>

    <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:text="Show Toast" android:onClick="showToast" android:id="@+id/button2"/>

</LinearLayout>
```

Android manifest.xml

```
<uses-permission android:name="android.permission.INTERNET"/>

<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>

<service android:name="DownloadService" > </service>

<service android:name="WrongDownloadService" android:process=":download" > </service>
```

- SHARE WORDS

MainActivity.java

```
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.content.Intent;
import android.view.View;
```

```

import android.widget.EditText;

public class MainActivity extends AppCompatActivity {

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    public void onClick(View view) {
        EditText editView = (EditText) findViewById(R.id.input);
        String string = editView.getText().toString();

        Intent intent = new Intent(Intent.ACTION_SEND);
        intent.setType("text/plain");
        intent.putExtra(Intent.EXTRA_TEXT, string);

        startActivity(Intent.createChooser(intent, "Share with:"));
    }
}

```

ShareReceiver.java

```

import android.app.Activity;
import android.content.Intent;
import android.os.Bundle;
import android.widget.Toast;

public class ShareReceiver extends Activity {

    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.receiver);
        Intent intent = getIntent();
        Bundle extras = intent.getExtras();
        String string = extras.getString(Intent.EXTRA_TEXT);
    }
}

```

```
        Toast.makeText(this, string, Toast.LENGTH_LONG).show();
    }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="UTF-8"?>

<LinearLayout android:orientation="vertical" android:layout_height="fill_parent"
    android:layout_width="fill_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <EditText android:layout_height="wrap_content" android:layout_width="match_parent"
        android:text="Practice, practice, practice, dear Developers!" android:id="@+id/input">
        <requestFocus/>
    </EditText>

    <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:text="Share" android:onClick="onClick"/>
</LinearLayout>
```

receiver.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical" >

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Large Text"
        android:textAppearance="?android:attr/textAppearanceLarge" />

</LinearLayout>
```

- **Battery charge information**

MainActivity.java

```
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.os.BatteryManager;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.IntentFilter;
import android.util.Log;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    TextView textBatteryLevel = null;
    String batteryLevelInfo = "Battery Level";

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        textBatteryLevel = (TextView) findViewById(R.id.txtBatteryInfo);

        registerBatteryLevelReceiver();
    }

    @Override
    protected void onDestroy() {
        unregisterReceiver(battery_receiver);

        super.onDestroy();
    }

    private BroadcastReceiver battery_receiver = new BroadcastReceiver() {
        @Override
        public void onReceive(Context context, Intent intent) {
            boolean isPresent = intent.getBooleanExtra("present", false);
            String technology = intent.getStringExtra("technology");
            int plugged = intent.getIntExtra("plugged", -1);
            int scale = intent.getIntExtra("scale", -1);
        }
    }
}
```

```

    int health = intent.getIntExtra("health", 0);
    int status = intent.getIntExtra("status", 0);
    int rawlevel = intent.getIntExtra("level", -1);
    int voltage = intent.getIntExtra("voltage", 0);
    int temperature = intent.getIntExtra("temperature", 0);
    int level = 0;

    Bundle bundle = intent.getExtras();

    Log.i("BatteryLevel", bundle.toString());

    if (isPresent) {
        if (rawlevel >= 0 && scale > 0) {
            level = (rawlevel * 100) / scale;
        }
    }

    String info = "Battery Level: " + level + "%\n";
    info += ("Technology: " + technology + "\n");
    info += ("Plugged: " + getPlugTypeString(plugged) + "\n");
    info += ("Health: " + getHealthString(health) + "\n");
    info += ("Status: " + getStatusString(status) + "\n");
    info += ("Voltage: " + voltage + "\n");
    info += ("Temperature: " + temperature + "\n");

    setBatteryLevelText(info + "\n\n" + bundle.toString());
} else {
    setBatteryLevelText("Battery not present!!!!");
}
}

private String getPlugTypeString(int plugged) {
    String plugType = "Unknown";

    switch (plugged) {
        case BatteryManager.BATTERY_PLUGGED_AC:
            plugType = "AC";
            break;
        case BatteryManager.BATTERY_PLUGGED_USB:
            plugType = "USB";
            break;
    }

    return plugType;
}

```

```

}

private String getHealthString(int health) {
    String healthString = "Unknown";

    switch (health) {
        case BatteryManager.BATTERY_HEALTH_DEAD:
            healthString = "Dead";
            break;
        case BatteryManager.BATTERY_HEALTH_GOOD:
            healthString = "Good";
            break;
        case BatteryManager.BATTERY_HEALTH_OVER_VOLTAGE:
            healthString = "Over Voltage";
            break;
        case BatteryManager.BATTERY_HEALTH_OVERHEAT:
            healthString = "Over Heat";
            break;
        case BatteryManager.BATTERY_HEALTH_UNSPECIFIED_FAILURE:
            healthString = "Failure";
            break;
    }

    return healthString;
}

private String getStatusString(int status) {
    String statusString = "Unknown";

    switch (status) {
        case BatteryManager.BATTERY_STATUS_CHARGING:
            statusString = "Charging";
            break;
        case BatteryManager.BATTERY_STATUS_DISCHARGING:
            statusString = "Discharging";
            break;
        case BatteryManager.BATTERY_STATUS_FULL:
            statusString = "Full";
            break;
        case BatteryManager.BATTERY_STATUS_NOT_CHARGING:
            statusString = "Not Charging";
            break;
    }
}

```

```

        return statusString;
    }

    private void setBatteryLevelText(String text) {
        textBatteryLevel.setText(text);
    }

    private void registerBatteryLevelReceiver() {
        IntentFilter filter = new IntentFilter(Intent.ACTION_BATTERY_CHANGED);

        registerReceiver(battery_receiver, filter);
    }
}

```

activity_main.xml:

```

<?xml version="1.0"?>

<LinearLayout android:padding="10dp" android:orientation="vertical"
    android:layout_height="match_parent" android:layout_width="match_parent"
    android:id="@+id/LinearLayout1" xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:id="@+id/txtBatteryInfo" android:text="TextView"/>

</LinearLayout>

```

- **SMS (Display of inbox, sent & draft)**

MainActivity.java

```

import android.app.Activity;
import android.content.ContentResolver;
import android.database.Cursor;
import android.net.Uri;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.view.View;
import android.view.View.OnClickListener;

```

```

import android.widget.Button;
import android.widget.ListView;
import android.widget.SimpleCursorAdapter;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity implements OnClickListener {

    // GUI Widget
    Button btnSent, btnInbox, btnDraft;
    TextView lblMsg, lblNo;
    ListView lvMsg;

    // Cursor Adapter
    SimpleCursorAdapter adapter;

    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.messagebox);

        // Init GUI Widget
        btnInbox = (Button) findViewById(R.id.btnInbox);
        btnInbox.setOnClickListener(this);

        btnSent = (Button) findViewById(R.id.btnSentBox);
        btnSent.setOnClickListener(this);

        btnDraft = (Button) findViewById(R.id.btnDraft);
        btnDraft.setOnClickListener(this);

        lvMsg = (ListView) findViewById(R.id.lvMsg);
    }

    @Override
    public void onClick(View v) {

        if (v == btnInbox) {

            // Create Inbox box URI
            Uri inboxURI = Uri.parse("content://sms/inbox");

            // List required columns

```

```

String[] reqCols = new String[] { "_id", "address", "body" };

// Get Content Resolver object, which will deal with Content
// Provider
ContentResolver cr = getContentResolver();

// Fetch Inbox SMS Message from Built-in Content Provider
Cursor c = cr.query(inboxURI, reqCols, null, null, null);

// Attached Cursor with adapter and display in listview
adapter = new SimpleCursorAdapter(this, R.layout.row, c,
        new String[] { "body", "address" }, new int[] {
                R.id.lblMsg, R.id.lblNumber });
lvMsg.setAdapter(adapter);

}

if (v == btnSent) {

    // Create Sent box URI
    Uri sentURI = Uri.parse("content://sms/sent");

    // List required columns
    String[] reqCols = new String[] { "_id", "address", "body" };

    // Get Content Resolver object, which will deal with Content
    // Provider
    ContentResolver cr = getContentResolver();

    // Fetch Sent SMS Message from Built-in Content Provider
    Cursor c = cr.query(sentURI, reqCols, null, null, null);

    // Attached Cursor with adapter and display in listview
    adapter = new SimpleCursorAdapter(this, R.layout.row, c,
            new String[] { "body", "address" }, new int[] {
                    R.id.lblMsg, R.id.lblNumber });
    lvMsg.setAdapter(adapter);

}

if (v == btnDraft) {
    // Create Draft box URI
    Uri draftURI = Uri.parse("content://sms/draft");
}

```

```

    // List required columns
    String[] reqCols = new String[] { "_id", "address", "body" };

    // Get Content Resolver object, which will deal with Content
    // Provider
    ContentResolver cr = getContentResolver();

    // Fetch Sent SMS Message from Built-in Content Provider
    Cursor c = cr.query(draftURI, reqCols, null, null, null);

    // Attached Cursor with adapter and display in listview
    adapter = new SimpleCursorAdapter(this, R.layout.row, c,
        new String[] { "body", "address" }, new int[] {
            R.id.lblMsg, R.id.lblNumber });
    lvMsg.setAdapter(adapter);
}

}
}

```

messagebox.xml

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent" android:layout_height="match_parent"
    android:orientation="vertical">
    <LinearLayout android:id="@+id/linearLayout1"
        android:layout_width="match_parent" android:layout_weight="0"
        android:layout_height="wrap_content">
        <Button android:text="Inbox" android:id="@+id	btnInbox"
            android:layout_height="wrap_content" android:layout_weight="0.5"
            android:layout_width="match_parent"></Button>
        <Button android:text="Sent Box" android:id="@+id	btnSentBox"
            android:layout_height="wrap_content" android:layout_weight="0.5"
            android:layout_width="match_parent"></Button>
        <Button android:layout_weight="0.5" android:layout_height="wrap_content"
            android:id="@+id	btnDraft" android:text="Draft"
            android:layout_width="match_parent"></Button>
    </LinearLayout>
    <ListView android:layout_width="match_parent"
        android:layout_weight="1" android:layout_height="match_parent"

```

```
    android:id="@+id/lvMsg">></ListView>

</LinearLayout>
```

row.xml

```
<?xml version="1.0" encoding="utf-8" ?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical" android:layout_width="match_parent"
    android:layout_height="match_parent">
    <TextView android:textAppearance="?android:attr/textAppearanceLarge"
        android:text="TextView" android:layout_width="wrap_content"
        android:layout_height="wrap_content" android:id="@+id/lblMsg"></TextView>
    <TextView android:textAppearance="?android:attr/textAppearanceMedium"
        android:text="TextView" android:layout_width="wrap_content"
        android:layout_height="wrap_content" android:textColor="#00f"
        android:id="@+id/lblNumber"></TextView>
</LinearLayout>
```

Android manifest.xml

```
<uses-permission android:name="android.permission.SEND_SMS" />

<uses-permission android:name="android.permission.READ_SMS" />
```

- Date Picker

MainActivity.java

```
import android.os.Bundle;
import android.widget.TextView;
import android.support.v7.app.AppCompatActivity;
import java.util.Calendar;
import android.app.DatePickerDialog;
import android.app.Dialog;
import android.view.View;
import android.view.View.OnClickListener;
```

```

import android.widget.Button;
import android.widget.DatePicker;

public class MainActivity extends AppCompatActivity {

    private TextView Output;
    private Button changeDate;

    private int year;
    private int month;
    private int day;

    static final int DATE_PICKER_ID = 1111;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        Output = (TextView) findViewById(R.id.Output);
        changeDate = (Button) findViewById(R.id.changeDate);

        // Get current date by calender

        final Calendar c = Calendar.getInstance();
        year = c.get(Calendar.YEAR);
        month = c.get(Calendar.MONTH);
        day = c.get(Calendar.DAY_OF_MONTH);

        // Show current date

        Output.setText(new StringBuilder()
            // Month is 0 based, just add 1
            .append(month + 1).append("-").append(day).append("-")
            .append(year).append(" "));

        // Button listener to show date picker dialog

        changeDate.setOnClickListener(new OnClickListener() {

            @Override
            public void onClick(View v) {

                // On button click show datepicker dialog

```

```
        showDialog(DATE_PICKER_ID) ;  
    }  
  
});  
}  
  
@Override  
protected Dialog onCreateDialog(int id) {  
    switch (id) {  
        case DATE_PICKER_ID:  
  
            // open datepicker dialog.  
            // set date picker for current date  
            // add pickerListener listner to date picker  
            return new DatePickerDialog(this, pickerListener, year,  
month,day);  
        }  
        return null;  
    }  
  
private DatePickerDialog.OnDateSetListener pickerListener = new  
DatePickerDialog.OnDateSetListener() {  
  
    // when dialog box is closed, below method will be called.  
    @Override  
    public void onDateSet(DatePicker view, int selectedYear,  
                           int selectedMonth, int selectedDay) {  
  
        year = selectedYear;  
        month = selectedMonth;  
        day = selectedDay;  
  
        // Show selected date  
        Output.setText(new StringBuilder().append(month + 1)  
                     .append("-").append(day).append("-").append(year)  
                     .append(" "));  
  
    }  
};  
}
```

activity_main.xml

```
<?xml version="1.0" encoding="UTF-8"?>

    <LinearLayout android:orientation="vertical" android:layout_height="fill_parent"
    android:layout_width="fill_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

        <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Click To Change Date" android:id="@+id/changeDate"/>

        <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Current/Selected Date (M-D-YYYY) : "
    android:textAppearance="?android:attr/textAppearanceLarge"/>

        <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="" android:id="@+id/Output"
    android:textAppearance="?android:attr/textAppearanceLarge"/>

    </LinearLayout>
```

- Time Picker

MainActivity.java

```
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import java.util.Calendar;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.TextView;
import android.widget.TimePicker;
import android.app.Dialog;
import android.app.TimePickerDialog;

public class MainActivity extends AppCompatActivity {
```

```

static final int TIME_DIALOG_ID = 1111;
private TextView output;
public Button btnClick;

private int hour;
private int minute;

@Override
public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    output = (TextView) findViewById(R.id.output);

    /***** display current time on screen Start *****/
}

final Calendar c = Calendar.getInstance();
// Current Hour
hour = c.get(Calendar.HOUR_OF_DAY);
// Current Minute
minute = c.get(Calendar.MINUTE);

// set current time into output textview
updateTime(hour, minute);

/***** display current time on screen End *****/

// Add Button Click Listener
addButtonClickListener();

}

public void addButtonClickListener() {

    btnClick = (Button) findViewById(R.id.btnClick);

    btnClick.setOnClickListener(new OnClickListener() {

        @Override
        public void onClick(View v) {

            showDialog(TIME_DIALOG_ID);
        }
    });
}

```

```

        }

    });

}

@Override
protected Dialog onCreateDialog(int id) {
    switch (id) {
        case TIME_DIALOG_ID:

            // set time picker as current time
            return new TimePickerDialog(this, timePickerListener, hour,
minute,
                false);

    }
    return null;
}

private TimePickerDialog.OnTimeSetListener timePickerListener = new
TimePickerDialog.OnTimeSetListener() {

    @Override
    public void onTimeSet(TimePicker view, int hourOfDay, int minutes) {
        // TODO Auto-generated method stub
        hour = hourOfDay;
        minute = minutes;

        updateTime(hour,minute);
    }
};

private static String utilTime(int value) {

    if (value < 10)
        return "0" + String.valueOf(value);
    else
        return String.valueOf(value);
}

```

```

private void updateTime(int hours, int mins) {

    String timeSet = "";
    if (hours > 12) {
        hours -= 12;
        timeSet = "PM";
    } else if (hours == 0) {
        hours += 12;
        timeSet = "AM";
    } else if (hours == 12)
        timeSet = "PM";
    else
        timeSet = "AM";


    String minutes = "";
    if (mins < 10)
        minutes = "0" + mins;
    else
        minutes = String.valueOf(mins);

    // Append in a StringBuilder
    String aTime = new StringBuilder().append(hours).append(":")
        .append(minutes).append(" ").append(timeSet).toString();

    output.setText(aTime);
}

}

```

activity_main.xml

```

<?xml version="1.0" encoding="UTF-8" ?>

<LinearLayout android:orientation="vertical" android:layout_height="fill_parent"
    android:layout_width="fill_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:text="Click To Change Time" android:id="@+id/btnClick"/>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"

```

```

    android:text="Current Time (H:M) : " android:id="@+id/lblTime"
    android:textAppearance="?android:attr/textAppearanceLarge"/>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="" android:id="@+id/output"
    android:textAppearance="?android:attr/textAppearanceLarge"/>

</LinearLayout>

```

- **Check Internet Connectivity**

MainActivity.java

```

import android.os.Bundle;

import android.support.v7.app.AppCompatActivity;

import android.view.View;

import android.net.ConnectivityManager;

import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        final Button Save = (Button) findViewById(R.id.save);

        Save.setOnClickListener(new OnClickListener() {
            public void onClick(View v) {
                isInternetOn();
            }
        });
    }
}

```

```

        });

    }

    public final boolean isInternetOn() {
        // get Connectivity Manager object to check connection
        ConnectivityManager connec =
        (ConnectivityManager) getSystemService(Context.CONNECTIVITY_SERVICE);

        // Check for network connections
        if ( connec.getNetworkInfo(0).getState() ==
        android.net.NetworkInfo.State.CONNECTED ||
            connec.getNetworkInfo(0).getState() ==
        android.net.NetworkInfo.State.CONNECTING ||
            connec.getNetworkInfo(1).getState() ==
        android.net.NetworkInfo.State.CONNECTING ||
            connec.getNetworkInfo(1).getState() ==
        android.net.NetworkInfo.State.CONNECTED ) {

            // if connected with internet
            Toast.makeText(this, " Connected ", Toast.LENGTH_LONG).show();
            return true;

        } else if ( connec.getNetworkInfo(0).getState() ==
        android.net.NetworkInfo.State.DISCONNECTED || connec.getNetworkInfo(1).getState() ==
        android.net.NetworkInfo.State.DISCONNECTED ) {

            Toast.makeText(this, " Not Connected ", Toast.LENGTH_LONG).show();
            return false;
        }
    }
}

```

activity_main.xml

```

<?xml version="1.0" encoding="UTF-8"?>

<LinearLayout android:layout_height="fill_parent"
    android:layout_width="fill_parent" android:orientation="vertical"
    xmlns:android="http://schemas.android.com/apk/res/android">

```

```

<Button android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:text="Click to check internet connectivity" android:id="@+id/save"> </Button>

<TextView android:layout_height="wrap_content" android:layout_width="fill_parent"
        android:text="@string/hello"/>

</LinearLayout>

```

Android manifest.xml

```
<uses-permission android:name="android.permission.ACCESS_NETWORK_STATE"/>
```

- Camera

MainActivity.java

```

import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import java.io.File;
import java.util.List;

import android.net.Uri;
import android.os.Bundle;
import android.os.Environment;
import android.provider.MediaStore;
import android.app.Activity;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.content.pm.ResolveInfo;
import android.graphics.Bitmap;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity implements OnClickListener {

```

```

Button btnTackPic;
TextView tvHasCamera, tvHasCameraApp;
ImageView ivThumbnailPhoto;
Bitmap bitMap;
static int TAKE_PICTURE = 1;

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    // Get reference to views
    tvHasCamera = (TextView) findViewById(R.id.tvHasCamera);
    tvHasCameraApp = (TextView) findViewById(R.id.tvHasCameraApp);
    btnTackPic = (Button) findViewById(R.id.btnTakePic);
    ivThumbnailPhoto = (ImageView) findViewById(R.id.ivThumbnailPhoto);

    // Does your device have a camera?
    if(hasCamera()){
        tvHasCamera.setBackgroundColor(0xFF00CC00);
        tvHasCamera.setText("You have Camera");
    }

    // Do you have Camera Apps?
    if(hasDefualtCameraApp(MediaStore.ACTION_IMAGE_CAPTURE)) {
        tvHasCameraApp.setBackgroundColor(0xFF00CC00);
        tvHasCameraApp.setText("You have Camera Apps");
    }

    // add onclick listener to the button
    btnTackPic.setOnClickListener(this);
}

// on button "btnTackPic" is clicked
@Override
public void onClick(View view) {

    // create intent with ACTION_IMAGE_CAPTURE action
    Intent intent = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);

    // to save picture remove comment
/*File file = new File(Environment.getExternalStorageDirectory(),
```

```

"my-photo.jpg");
Uri photoPath = Uri.fromFile(file);
intent.putExtra(MediaStore.EXTRA_OUTPUT, photoPath); */

// start camera activity
startActivityForResult(intent, TAKE_PICTURE);

}

// The Android Camera application encodes the photo in the return Intent
delivered to onActivityResult()

// as a small Bitmap in the extras, under the key "data"
@Override
protected void onActivityResult(int requestCode, int resultCode, Intent
intent) {

    if (requestCode == TAKE_PICTURE && resultCode== RESULT_OK && intent != null) {
        // get bundle
        Bundle extras = intent.getExtras();

        // get
        bitMap = (Bitmap) extras.get("data");
        ivThumbnailPhoto.setImageBitmap(bitMap);

    }
}

// method to check you have a Camera
private boolean hasCamera(){
    return
getPackageManager().hasSystemFeature(PackageManager.FEATURE_CAMERA);
}

// method to check you have Camera Apps
private boolean hasDefualtCameraApp(String action){
    final PackageManager packageManager = getPackageManager();
    final Intent intent = new Intent(action);
    List<ResolveInfo> list = packageManager.queryIntentActivities(intent,
PackageManager.MATCH_DEFAULT_ONLY);

    return list.size() > 0;
}

```

```
    }  
}
```

activity_main.xml

```
<?xml version="1.0"?>  
  
    <LinearLayout android:orientation="vertical" tools:context=".MainActivity"  
        android:layout_margin="10dp" android:layout_height="match_parent"  
        android:layout_width="match_parent" xmlns:tools="http://schemas.android.com/tools"  
        xmlns:android="http://schemas.android.com/apk/res/android">  
  
        <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"  
            android:text="Has Camera? " android:layout_marginBottom="5dp" android:textSize="18dp"  
            android:textColor="#FFF" android:background="#FF0000"  
            android:layout_gravity="center_horizontal" android:id="@+id/tvHasCamera"/>  
  
        <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"  
            android:text="Has Camera App?" android:textSize="18dp" android:textColor="#FFF"  
            android:background="#FF0000" android:layout_gravity="center_horizontal"  
            android:id="@+id/tvHasCameraApp"/>  
  
        <ImageView android:layout_height="wrap_content" android:layout_width="wrap_content"  
            android:layout_gravity="center_horizontal" android:id="@+id/ivThumbnailPhoto"  
            android:src="@mipmap/ic_launcher"/>  
  
        <Button android:layout_height="wrap_content" android:layout_width="wrap_content"  
            android:text="Take a Picture" android:layout_gravity="center_horizontal"  
            android:id="@+id/btnTakePic"/>  
  
    </LinearLayout>
```

Android manifest.xml

```
<uses-feature android:name="android.hardware.camera"/>  
  
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>
```

- List view (Search engine)

MainActivity.java

```

import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import java.util.ArrayList;
import java.util.HashMap;
import android.app.Activity;
import android.os.Bundle;
import android.text.Editable;
import android.text.TextWatcher;
import android.widget.ArrayAdapter;
import android.widget.EditText;
import android.widget.ListView;

public class MainActivity extends AppCompatActivity {

    // List view
    private ListView lv;

    // Listview Adapter
    ArrayAdapter<String> adapter;

    // Search EditText
    EditText inputSearch;

    // ArrayList for Listview
    ArrayList<HashMap<String, String>> productList;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Listview Data
        String products[] = {"Afghanistan",
            "Albania",
            "Algeria",
            "Andorra",

```

"**Angola**",
"**Antigua and Barbuda**",
"**Argentina**",
"**Armenia**",
"**Australia**",
"**Austria**",
"**Azerbaijan**",
"**Bahamas**",
"**Bahrain**",
"**Bangladesh**",
"**Barbados**",
"**Belarus**",
"**Belgium**",
"**Belize**",
"**Benin**",
"**Bhutan**",
"**Bolivia**",
"**Bosnia and Herzegovina**",
"**Botswana**",
"**Brazil**",
"**Brunei**",
"**Bulgaria**",
"**Burkina Faso**",
"**Burundi**",
"**Cambodia**",
"**Cameroon**",
"**Canada**",
"**Cape Verde**",
"**Central African Republic**",
"**Chad**",
"**Chile**",
"**China**",
"**Colombi**",
"**Comoros**",
"**Congo (Brazzaville)**",
"**Congo**",
"**Costa Rica**",
"**Cote d'Ivoire**",
"**Croatia**",
"**Cuba**",
"**Cyprus**",
"**Czech Republic**",
"**Denmark**",
"**Djibouti**",

"Dominica",
"Dominican Republic",
"East Timor (Timor Timur)",
"Ecuador",
"Egypt",
"El Salvador",
"Equatorial Guinea",
"Eritrea",
"Estonia",
"Ethiopia",
"Fiji",
"Finland",
"France",
"Gabon",
"Gambia, The",
"Georgia",
"Germany",
"Ghana",
"Greece",
"Grenada",
"Guatemala",
"Guinea",
"Guinea-Bissau",
"Guyana",
"Haiti",
"Honduras",
"Hungary",
"Iceland",
"India",
"Indonesia",
"Iran",
"Iraq",
"Ireland",
"Israel",
"Italy",
"Jamaica",
"Japan",
"Jordan",
"Kazakhstan",
"Kenya",
"Kiribati",
"Korea, North",
"Korea, South",
"Kuwait",

"Kyrgyzstan",
"Laos",
"Latvia",
"Lebanon",
"Lesotho",
"Liberia",
"Libya",
"Liechtenstein",
"Lithuania",
"Luxembourg",
"Macedonia",
"Madagascar",
"Malawi",
"Malaysia",
"Maldives",
"Mali",
"Malta",
"Marshall Islands",
"Mauritania",
"Mauritius",
"Mexico",
"Micronesia",
"Moldova",
"Monaco",
"Mongolia",
"Morocco",
"Mozambique",
"Myanmar",
"Namibia",
"Nauru",
"Nepal",
"Netherlands",
"New Zealand",
"Nicaragua",
"Niger",
"Nigeria",
"Norway",
"Oman",
"Pakistan",
"Palau",
"Panama",
"Papua New Guinea",
"Paraguay",
"Peru",

"Philippines",
"Poland",
"Portugal",
"Qatar",
"Romania",
"Russia",
"Rwanda",
"Saint Kitts and Nevis",
"Saint Lucia",
"Saint Vincent",
"Samoa",
"San Marino",
"Sao Tome and Principe",
"Saudi Arabia",
"Senegal",
"Serbia and Montenegro",
"Seychelles",
"Sierra Leone",
"Singapore",
"Slovakia",
"Slovenia",
"Solomon Islands",
"Somalia",
"South Africa",
"Spain",
"Sri Lanka",
"Sudan",
"Suriname",
"Swaziland",
"Sweden",
"Switzerland",
"Syria",
"Taiwan",
"Tajikistan",
"Tanzania",
"Thailand",
"Togo",
"Tonga",
"Trinidad and Tobago",
"Tunisia",
"Turkey",
"Turkmenistan",
"Tuvalu",
"Uganda",

```

    "Ukraine",
    "United Arab Emirates",
    "United Kingdom",
    "United States",
    "Uruguay",
    "Uzbekistan",
    "Vanuatu",
    "Vatican City",
    "Venezuela",
    "Vietnam",
    "Yemen",
    "Zambia",
    "Zimbabwe"};
```

lv = (ListView) findViewById(R.id.list_view);
inputSearch = (EditText) findViewById(R.id.inputSearch);

// Adding items to listview
adapter = new ArrayAdapter<String>(this, R.layout.list_item,
R.id.product_name, products);
lv.setAdapter(adapter);

/**
 * Enabling Search Filter
 * */
inputSearch.addTextChangedListener(new TextWatcher() {

 @Override
 public void onTextChanged(CharSequence cs, int arg1, int arg2, int
arg3) {
 // When user changed the Text
 MainActivity.this.adapter.getFilter().filter(cs);
 }

 @Override
 public void beforeTextChanged(CharSequence arg0, int arg1, int arg2,
 int arg3) {
 // TODO Auto-generated method stub

 }

 @Override
 public void afterTextChanged(Editable arg0) {
 // TODO Auto-generated method stub

```

        }
    });
}

}

```

activity_main.xml

```

<?xml version="1.0" encoding="utf-8" ?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="vertical" >

    <!-- Edittext for Search -->
    <EditText android:id="@+id/inputSearch"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:hint="Search products.."
        android:inputType="textVisiblePassword"/>

    <!-- List View -->
    <ListView
        android:id="@+id/list_view"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content" />

</LinearLayout>

```

list_item.xml

```

<?xml version="1.0" encoding="utf-8" ?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical" >

    <!-- Single ListItem -->
    <!-- Product Name -->
    <TextView android:id="@+id/product_name" 

```

```

    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:padding="10dip"
    android:textSize="16dip"
    android:textStyle="bold"/>

```

</LinearLayout>

- **Android Unique ID**

MainActivity.java

```

import android.support.v7.app.AppCompatActivity;
import java.lang.reflect.Method;
import android.content.Context;
import android.os.Bundle;
import android.provider.Settings;
import android.telephony.TelephonyManager;
import android.util.Log;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    private static final String TAG = "UniqueId";

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);
    }

    @Override
    protected void onResume() {
        super.onResume();

        // Get "Device Serial Number". The Android SystemProperties is apparently not
        for public use,
        // as it exists on-device but is NOT exposed in the SDK, so treat with a grain
        of salt!
    }
}

```

```

String serialNumber = "unknown";
try {
    Class<?> c = Class.forName("android.os.SystemProperties");
    Method get = c.getMethod("get", String.class, String.class);
    serialNumber = (String) get.invoke(c, "ro.serialno", serialNumber);
} catch (Exception e) {
    Log.e(TAG, "Failed to get serial number", e);
}
((TextView) findViewById(R.id.serial_number)).setText(serialNumber);

// Get "Android ID". According to the JavaDoc:
// "A 64-bit number (as a hex string) that is
// randomly generated on the device's first boot
// and should remain constant for the lifetime
// of the device. (The value may change if a
// factory reset is performed on the device.)"
String androidId = Settings.Secure.getString(getContentResolver(),
Settings.Secure.ANDROID_ID);
((TextView) findViewById(R.id.android_id)).setText(androidId);

// Get the mobile device id (IMEI or similar) if any
String imei = ((TelephonyManager)
getSystemService(Context.TELEPHONY_SERVICE)).getDeviceId();
((TextView) findViewById(R.id.imei)).setText(imei);
}

}

```

main.xml

```

<?xml version="1.0"?>

<TableLayout tools:context=".MainActivity" android:padding="5sp"
android:layout_height="match_parent" android:layout_width="match_parent"
xmlns:tools="http://schemas.android.com/tools"
xmlns:android="http://schemas.android.com/apk/res/android">

<TableRow>

<TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
android:text="@string/serial_number"/>

<TextView android:layout_height="wrap_content" android:layout_width="wrap_content"

```

```

    android:id="@+id/serial_number" />

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="@string/imei" />

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:id="@+id/imei" />

</TableRow>

<TableRow>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="@string/android_id" />

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:id="@+id/android_id" />

</TableRow>

</TableLayout>

```

string.xml

```

<string name="imei">IMEI (Mobile ID)</string>

<string name="android_id">Android ID</string>

<string name="serial_number">Dev Serial Num</string>

```

Android manifest.xml

```

<uses-permission android:name="android.permission.READ_PHONE_STATE" />

```

- **Telephony Manager**

MainActivity.java

```
import android.support.v7.app.AppCompatActivity;
import java.util.List;
import android.os.Bundle;
import android.telephony.CellLocation;
import android.telephony.NeighboringCellInfo;
import android.telephony.PhoneStateListener;
import android.telephony.ServiceState;
import android.telephony.TelephonyManager;
import android.telephony.gsm.GsmCellLocation;
import android.util.Log;
import android.widget.ImageView;
import android.widget.ProgressBar;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    private static final String APP_NAME = "SignalLevelSample";
    private static final int EXCELLENT_LEVEL = 75;
    private static final int GOOD_LEVEL = 50;
    private static final int MODERATE_LEVEL = 25;
    private static final int WEAK_LEVEL = 0;

    private static final int INFO_SERVICE_STATE_INDEX = 0;
    private static final int INFO_CELL_LOCATION_INDEX = 1;
    private static final int INFO_CALL_STATE_INDEX = 2;
    private static final int INFO_CONNECTION_STATE_INDEX = 3;
    private static final int INFO_SIGNAL_LEVEL_INDEX = 4;
    private static final int INFO_SIGNAL_LEVEL_INFO_INDEX = 5;
    private static final int INFO_DATA_DIRECTION_INDEX = 6;
    private static final int INFO_DEVICE_INFO_INDEX = 7;

    private static final int[] info_ids = { R.id.serviceState_info,
        R.id.cellLocation_info, R.id.callState_info,
        R.id.connectionState_info, R.id.signalLevel, R.id.signalLevelInfo,
        R.id.dataDirection, R.id.device_info };

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
```

```

        startSignalLevelListener();
        displayTelephonyInfo();
    }

    @Override
    protected void onPause() {
        super.onPause();
        stopListening();
    }

    @Override
    protected void onResume() {
        super.onResume();
        startSignalLevelListener();
    }

    @Override
    protected void onDestroy() {
        stopListening();
        super.onDestroy();
    }

    private void setTextViewText(int id, String text) {
        ((TextView) findViewById(id)).setText(text);
    }

    private void setSignalLevel(int id, int infoid, int level) {
        int progress = (int) (((float) level) / 31.0) * 100;
        String signalLevelString = getSignalLevelString(progress);
        ((ProgressBar) findViewById(id)).setProgress(progress);
        ((TextView) findViewById(infoid)).setText(signalLevelString);
        Log.i("signalLevel ", "" + progress);
    }

    private String getSignalLevelString(int level) {
        String signalLevelString = "Weak";
        if (level > EXCELLENT_LEVEL)
            signalLevelString = "Excellent";
        else if (level > GOOD_LEVEL)
            signalLevelString = "Good";
        else if (level > MODERATE_LEVEL)
            signalLevelString = "Moderate";
        else if (level > WEAK_LEVEL)
            signalLevelString = "Weak";
    }

```

```

    return signalLevelString;
}

private void stopListening() {
    TelephonyManager tm = (TelephonyManager)
getSystemService(TELEPHONY_SERVICE);
    tm.listen(phoneStateListener, PhoneStateListener.LISTEN_NONE);
}

private void setDataDirection(int id, int direction) {
    int resid = getDataDirectionRes(direction);
    ((ImageView) findViewById(id)).setImageResource(resid);
}

private int getDataDirectionRes(int direction) {
    int resid = R.drawable.data_none;

    switch (direction) {
        case TelephonyManager.DATA_ACTIVITY_IN:
            resid = R.drawable.data_in;
            break;
        case TelephonyManager.DATA_ACTIVITY_OUT:
            resid = R.drawable.data_out;
            break;
        case TelephonyManager.DATA_ACTIVITY_INOUT:
            resid = R.drawable.data_both;
            break;
        case TelephonyManager.DATA_ACTIVITY_NONE:
            resid = R.drawable.data_none;
            break;
        default:
            resid = R.drawable.data_none;
            break;
    }
    return resid;
}

private void startSignalLevelListener() {
    TelephonyManager tm = (TelephonyManager)
getSystemService(TELEPHONY_SERVICE);
    int events = PhoneStateListener.LISTEN_SIGNAL_STRENGTH
        | PhoneStateListener.LISTEN_DATA_ACTIVITY
        | PhoneStateListener.LISTEN_CELL_LOCATION
        | PhoneStateListener.LISTEN_CALL_STATE
}

```

```

        | PhoneStateListener.LISTEN_CALL_FORWARDING_INDICATOR
        | PhoneStateListener.LISTEN_DATA_CONNECTION_STATE
        | PhoneStateListener.LISTEN_MESSAGE_WAITING_INDICATOR
        | PhoneStateListener.LISTEN_SERVICE_STATE;
    tm.listen(phoneStateListener, events);
}

private void displayTelephonyInfo() {
    TelephonyManager tm = (TelephonyManager)
getSystemService(TELEPHONY_SERVICE);
    GsmCellLocation loc = (GsmCellLocation) tm.getCellLocation();
    // Reorganize it to do one getSomeData, logString it in pairs, with code
guards
    if (loc == null) {
        return;
    }
    int cellid = loc.getCid();
    int lac = loc.getLac();
    String deviceid = tm.getDeviceId();
    String phonenumber = tm.getLine1Number();
    String softwareversion = tm.getDeviceSoftwareVersion();
    String operatorname = tm.getNetworkOperatorName();
    String simcountrycode = tm.getSimCountryIso();
    String simoperator = tm.getSimOperatorName();
    String simserialno = tm.getSimSerialNumber();
    String subscriberid = tm.getSubscriberId();
    String networktype = getNetworkTypeString(tm.getNetworkType());
    String phonetype = getPhoneTypeString(tm.getPhoneType());
    logString("CellID: " + cellid);
    logString("LAC: " + lac);
    logString("Device ID: " + deviceid);
    logString("Phone Number: " + phonenumber);
    logString("Software Version: " + softwareversion);
    logString("Operator Name: " + operatorname);
    logString("SIM Country Code: " + simcountrycode);
    logString("SIM Operator: " + simoperator);
    logString("SIM Serial No.: " + simserialno);
    logString("Sibscriber ID: " + subscriberid);
    String deviceinfo = "";
    deviceinfo += ("CellID: " + cellid + "\n");
    deviceinfo += ("LAC: " + lac + "\n");
    deviceinfo += ("Device ID: " + deviceid + "\n");
    deviceinfo += ("Phone Number: " + phonenumber + "\n");
    deviceinfo += ("Software Version: " + softwareversion + "\n");
}

```

```

deviceinfo += ("Operator Name: " + operatorname + "\n");
deviceinfo += ("SIM Country Code: " + simcountrycode + "\n");
deviceinfo += ("SIM Operator: " + simoperator + "\n");
deviceinfo += ("SIM Serial No.: " + simserialno + "\n");
deviceinfo += ("Subscriber ID: " + subscriberid + "\n");
deviceinfo += ("Network Type: " + networktype + "\n");
deviceinfo += ("Phone Type: " + phonetype + "\n");
List<NeighboringCellInfo> cellinfo = tm.getNeighboringCellInfo();
if (null != cellinfo) {
    for (NeighboringCellInfo info : cellinfo) {
        deviceinfo += ("\tCellID: " + info.getCid() + ", RSSI: "
            + info.getRssi() + "\n");
    }
}
setTextViewText(info_ids[INFO_DEVICE_INFO_INDEX], deviceinfo);
}

private String getNetworkTypeString(int type) {
    String typeString = "Unknown";
    switch (type) {
        case TelephonyManager.NETWORK_TYPE_EDGE:
            typeString = "EDGE";
            break;
        case TelephonyManager.NETWORK_TYPE_GPRS:
            typeString = "GPRS";
            break;
        case TelephonyManager.NETWORK_TYPE_UMTS:
            typeString = "UMTS";
            break;
        default:
            typeString = "UNKNOWN";
            break;
    }
    return typeString;
}

private String getPhoneTypeString(int type) {
    String typeString = "Unknown";
    switch (type) {
        case TelephonyManager.PHONE_TYPE_GSM:
            typeString = "GSM";
            break;
        case TelephonyManager.PHONE_TYPE_NONE:
            typeString = "UNKNOWN";
    }
}

```

```

        break;
    default:
        typeString = "UNKNOWN";
        break;
    }
    return typeString;
}

private int logString(String message) {
    return Log.i(APP_NAME, message);
}

private final PhoneStateListener phoneStateListener = new PhoneStateListener()
{
    @Override
    public void onCallForwardingIndicatorChanged(boolean cfi) {
        Log.i(APP_NAME, "onCallForwardingIndicatorChanged " + cfi);
        super.onCallForwardingIndicatorChanged(cfi);
    }

    @Override
    public void onCallStateChanged(int state, String incomingNumber) {
        String callState = "UNKNOWN";
        switch (state) {
            case TelephonyManager.CALL_STATE_IDLE:
                callState = "IDLE";
                break;
            case TelephonyManager.CALL_STATE_RINGING:
                callState = "Ringing (" + incomingNumber + ")";
                break;
            case TelephonyManager.CALL_STATE_OFFHOOK:
                callState = "Offhook";
                break;
        }
        setTextViewText(info_ids[INFO_CALL_STATE_INDEX], callState);
        Log.i(APP_NAME, "onCallStateChanged " + callState);
        super.onCallStateChanged(state, incomingNumber);
    }

    @Override
    public void onCellLocationChanged(CellLocation location) {
        String locationString = location.toString();
        setTextViewText(info_ids[INFO_CELL_LOCATION_INDEX], locationString);
    }
}

```

```

        Log.i(APP_NAME, "onCellLocationChanged " + locationString);
        super.onCellLocationChanged(location);
    }

    @Override
    public void onDataActivity(int direction) {
        String directionString = "none";
        switch (direction) {
            case TelephonyManager.DATA_ACTIVITY_IN:
                directionString = "IN";
                break;
            case TelephonyManager.DATA_ACTIVITY_OUT:
                directionString = "OUT";
                break;
            case TelephonyManager.DATA_ACTIVITY_INOUT:
                directionString = "INOUT";
                break;
            case TelephonyManager.DATA_ACTIVITY_NONE:
                directionString = "NONE";
                break;
            default:
                directionString = "UNKNOWN: " + direction;
                break;
        }

        setDataDirection(info_ids[INFO_DATA_DIRECTION_INDEX], direction);
        Log.i(APP_NAME, "onDataActivity " + directionString);
        super.onDataActivity(direction);
    }

    @Override
    public void onDataConnectionStateChanged(int state) {
        String connectionState = "Unknown";
        switch (state) {
            case TelephonyManager.DATA_CONNECTED:
                connectionState = "Connected";
                break;
            case TelephonyManager.DATA_CONNECTING:
                connectionState = "Connecting";
                break;
            case TelephonyManager.DATA_DISCONNECTED:
                connectionState = "Disconnected";
                break;
        }
    }
}

```

```

    case TelephonyManager.DATA_SUSPENDED:
        connectionState = "Suspended";
        break;
    default:

        connectionState = "Unknown: " + state;
        break;
    }

    setTextViewText(info_ids[INFO_CONNECTION_STATE_INDEX],
                    connectionState);

    Log.i(APP_NAME, "onDataConnectionStateChanged " + connectionState);

    super.onDataConnectionStateChanged(state);
}

@Override
public void onMessageWaitingIndicatorChanged(boolean mwi) {
    Log.i(APP_NAME, "onMessageWaitingIndicatorChanged " + mwi);
    super.onMessageWaitingIndicatorChanged(mwi);
}

@Override
public void onServiceStateChanged(ServiceState serviceState) {
    String serviceStateString = "UNKNOWN";
    switch (serviceState.getState()) {
        case ServiceState.STATE_IN_SERVICE:
            serviceStateString = "IN SERVICE";
            break;
        case ServiceState.STATE_EMERGENCY_ONLY:
            serviceStateString = "EMERGENCY ONLY";
            break;
        case ServiceState.STATE_OUT_OF_SERVICE:
            serviceStateString = "OUT OF SERVICE";
            break;
        case ServiceState.STATE_POWER_OFF:
            serviceStateString = "POWER OFF";
            break;
        default:

            serviceStateString = "UNKNOWN";
            break;
    }
}

```

```

        setTextviewText(info_ids[INFO_SERVICE_STATE_INDEX],
                        serviceStateString);

        Log.i(APP_NAME, "onServiceStateChanged " + serviceStateString);

        super.onServiceStateChanged(serviceState);
    }

    @Override
    public void onSignalStrengthChanged(intasu) {
        Log.i(APP_NAME, "onSignalStrengthChanged " +asu);
        setSignalLevel(info_ids[INFO_SIGNAL_LEVEL_INDEX],
                      info_ids[INFO_SIGNAL_LEVEL_INFO_INDEX],asu);
        super.onSignalStrengthChanged(asu);
    }
}
}
}

```

activity_main.xml

```

<?xml version="1.0" encoding="UTF-8"?>

<ScrollView android:scrollbarAlwaysDrawVerticalTrack="false"
            android:scrollbarStyle="insideOverlay" android:orientation="vertical"
            android:layout_height="wrap_content" android:layout_width="fill_parent"
            xmlns:android="http://schemas.android.com/apk/res/android">

    -<LinearLayout android:orientation="vertical" android:layout_height="fill_parent"
                  android:layout_width="fill_parent">

        -<LinearLayout android:orientation="horizontal"
                      android:layout_height="wrap_content" android:layout_width="fill_parent">

            <TextView style="@style/labelStyleRight" android:text="Service State"
                      android:layout_width="wrap_content"
                      android:layout_height="wrap_content" />

            <TextView style="@style/textStyle" android:id="@+id/serviceState_info"
                      android:layout_width="wrap_content"
                      android:layout_height="wrap_content" />

```

```

</LinearLayout>

- <LinearLayout android:orientation="horizontal"
    android:layout_height="wrap_content" android:layout_width="fill_parent">

    <TextView style="@style/labelStyleRight" android:text="Cell Location"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />

    <TextView style="@style/textStyle" android:id="@+id/cellLocation_info"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />

</LinearLayout>

<LinearLayout android:orientation="horizontal"
    android:layout_height="wrap_content" android:layout_width="fill_parent">

    <TextView style="@style/labelStyleRight" android:text="Call State"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />

    <TextView style="@style/textStyle" android:id="@+id/callState_info"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />

</LinearLayout>

<LinearLayout android:orientation="horizontal"
    android:layout_height="wrap_content" android:layout_width="fill_parent">

    <TextView style="@style/labelStyleRight" android:text="Connection State"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />

    <TextView style="@style/textStyle" android:id="@+id/connectionState_info"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />

</LinearLayout>

```

```

<LinearLayout android:orientation="horizontal"
    android:layout_height="wrap_content" android:layout_width="fill_parent">

    <TextView style="@style/labelStyleRight" android:text="Signal Level"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />

    <LinearLayout android:orientation="horizontal"
        android:layout_height="wrap_content" android:layout_width="fill_parent"
        android:layout_weight="0.5">

        <ProgressBar style="@style/progressStyle" android:id="@+id/signalLevel"
            android:layout_height="wrap_content"
            android:layout_width="wrap_content" />

        <TextView style="@style/textSmallStyle" android:id="@+id/signalLevelInfo"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content" />

    </LinearLayout>
</LinearLayout>

<LinearLayout android:orientation="horizontal"
    android:layout_height="wrap_content" android:layout_width="fill_parent">

    <TextView style="@style/labelStyleRight" android:text="Data"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />

    <ImageView style="@style/imageStyle" android:id="@+id/dataDirection"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />

</LinearLayout>

<TextView style="@style/labelStyleLeft" android:id="@+id/device_info"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />

```

```
</LinearLayout>

</ScrollView>
```

Android manifest.xml

```
<uses-permission android:name="android.permission.READ_PHONE_STATE"/>

<uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION"/>
```

- Video Capture

MainActivity.java

```
import android.support.v7.app.AppCompatActivity;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.VideoView;

public class MainActivity extends AppCompatActivity implements OnClickListener {

    public static int VIDEO_CAPTURED = 1;

    Button captureVideoButton;
    Button playVideoButton;

    VideoView videoView;
    Uri videoFileUri;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        captureVideoButton = (Button) this.findViewById(R.id.CaptureVideoButton);
        playVideoButton = (Button) this.findViewById(R.id.PlayVideoButton);
        captureVideoButton.setOnClickListener(this);
```

```

    playVideoButton.setOnClickListener(this);
    playVideoButton.setEnabled(false);
    videoView = (VideoView) this.findViewById(R.id.VideoView);
}

public void onClick(View v) {
    if (v == captureVideoButton) {
        Intent captureVideoIntent = new
Intent(android.provider.MediaStore.ACTION_VIDEO_CAPTURE);
        startActivityForResult(captureVideoIntent, VIDEO_CAPTURED);
    } else if (v == playVideoButton) {
        videoView.setVideoURI(videoFileUri);
        videoView.start();
    }
}

protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    if (resultCode == RESULT_OK && requestCode == VIDEO_CAPTURED) {
        videoFileUri = data.getData();
        playVideoButton.setEnabled(true);
    }
}
}

```

activity_main.xml

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    >
    <Button android:text="Capture Video" android:id="@+id/CaptureVideoButton"
        android:layout_width="wrap_content" android:layout_height="wrap_content"></Button>
    <Button android:text="Play Video" android:id="@+id/PlayVideoButton"
        android:layout_width="wrap_content" android:layout_height="wrap_content"></Button>
    <VideoView android:id="@+id/VideoView" android:layout_width="wrap_content"
        android:layout_height="wrap_content"></VideoView>
</LinearLayout>

```

Android manifest.xml

```
<uses-permission android:name="android.permission.RECORD_AUDIO"></uses-permission>
<uses-permission android:name="android.permission.CAMERA"></uses-permission>
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"></uses-
permission>
```

- **Image, Video & Audio**

MainActivity.java

```
import android.app.Activity;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.support.v7.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity implements View.OnClickListener {

    private static final int REQUEST_AUDIO = 1;
    private static final int REQUEST_VIDEO = 2;
    private static final int REQUEST_IMAGE = 3;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        Button images = (Button) findViewById(R.id.imageButton);
        images.setOnClickListener(this);
        Button videos = (Button) findViewById(R.id.videoButton);
        videos.setOnClickListener(this);
        Button audio = (Button) findViewById(R.id.audioButton);
        audio.setOnClickListener(this);

    }

    @Override
    protected void onActivityResult(int requestCode, int resultCode, Intent data)
{
```

```

    if(resultCode == Activity.RESULT_OK) {
        Uri selectedContent = data.getData();
        if(requestCode == REQUEST_IMAGE) {
            //Display the image
        }
        if(requestCode == REQUEST_VIDEO) {
            //Play the video clip
        }
        if(requestCode == REQUEST_AUDIO) {
            //Play the audio clip
        }
    }

    @Override
    public void onClick(View v) {
        Intent intent = new Intent();
        intent.setAction(Intent.ACTION_GET_CONTENT);
        switch(v.getId()) {
            case R.id.imageButton:
                intent.setType("image/*");
                startActivityForResult(intent, REQUEST_IMAGE);
                return;
            case R.id.videoButton:
                intent.setType("video/*");
                startActivityForResult(intent, REQUEST_VIDEO);
                return;
            case R.id.audioButton:
                intent.setType("audio/*");
                startActivityForResult(intent, REQUEST_AUDIO);
                return;
            default:
                return;
        }
    }
}

```

activity_main.xml

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"

```

```

    android:layout_width="fill_parent"
    android:layout_height="fill_parent">
    <Button
        android:id="@+id/imageButton"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Images"
    />
    <Button
        android:id="@+id/videoButton"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Video"
    />
    <Button
        android:id="@+id/audioButton"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Audio"
    />
</LinearLayout>

```

- Screen Resolution information

MainActivity.java

```

import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.util.DisplayMetrics;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {

```

```

super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);

/** An object to get Screen display metrics */
DisplayMetrics metrics = new DisplayMetrics();

/** Getting the screen display metrics */
getWindowManager().getDefaultDisplay().getMetrics(metrics);

/** Getting reference to TextView object of the main.xml file */
TextView tvMetrics = (TextView) findViewById(R.id.tv_metrics);

/** Getting the screen density in dpi */
String density = Integer.toString(metrics.densityDpi);

/** Getting the screen width and height in pixels */
String resolution = Integer.toString(metrics.widthPixels) + "x" +
Integer.toString(metrics.heightPixels);

/** Converting Screen resolution in pixels into dp */
float dp_w = (metrics.widthPixels * 160) / metrics.xdpi;

/** Converting Screen resolution in pixels into dp */
float dp_h = (metrics.heightPixels * 160) / metrics.ydpi;

/** Getting the screen width and height in dp */
String resolution_dp = Float.toString((int)dp_w) + "x" +
Float.toString((int)dp_h);

/** Setting the density, width and height of the screen to the TextView
object */
tvMetrics.setText("Density : "+density + "\n" + "Resolution in pixels : "
+ resolution + "\nResolution in dp : " + resolution_dp );

}
}

```

activity_main.xml

```

<?xml version="1.0" encoding="UTF-8"?>

<LinearLayout android:orientation="vertical" android:layout_height="fill_parent"

```

```

    android:layout_width="fill_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <TextView android:layout_height="wrap_content" android:layout_width="fill_parent"
    android:id="@+id/tv_metrics"/>

</LinearLayout>

```

- **Open Dial Pad**

MainActivity.java

```

import android.support.v7.app.AppCompatActivity;
import android.app.Activity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {

    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        /** Referring to the button object of the main.xml layout */
        Button btn = (Button) findViewById(R.id.btn);

        /** Defining a click event listener */
        OnClickListener listener = new OnClickListener() {
            @Override
            public void onClick(View v) {
                /** Creating an intent with the dialer's action name */
                /** Since the intent is created with activity's action name, the
                intent is an implicit intent */
                Intent intent = new Intent("android.intent.action.DIAL");

                /** Starting the Dialer activity */
                startActivity(intent);
            }
        }
    }
}

```

```

    };

    /** Setting click event listener for the buttons */
    btn.setOnClickListener(listener);
}

}

```

activity_main.xml

```

<?xml version="1.0" encoding="UTF-8" ?>

<LinearLayout android:orientation="vertical" android:layout_height="fill_parent"
    android:layout_width="fill_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <Button android:layout_height="wrap_content" android:layout_width="fill_parent"
        android:text="@string/dialer" android:id="@+id(btn")/>

</LinearLayout>

```

string.xml

```

<string name="dialer">Open Dialer</string>

```

- URL browser search engine

MainActivity.java

```

import android.support.v7.app.AppCompatActivity;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.EditText;

```

```

public class MainActivity extends AppCompatActivity {

    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        /** Getting a reference to the button object of the main.xml */
        Button btn = (Button) findViewById(R.id.btn_browser);

        OnClickListener listener = new OnClickListener() {

            @Override
            public void onClick(View v) {
                /** Getting a reference to the textedit object of the main.xml */
                EditText txt = (EditText) findViewById(R.id.te_url);

                /** Creating a view action to display the website */
                Intent intent = new Intent("android.intent.action.VIEW");

                /** Setting up a uri object with a web address */
                Uri data = Uri.parse("http://" + txt.getText().toString());

                /** Setting web address to the intent object as data */
                intent.setData(data);

                /** Start an activity that matches intent action and intent data */
                startActivity(intent);

            }
        };

        btn.setOnClickListener(listener);
    }
}

```

activity_main.xml

```

<?xml version="1.0" encoding="UTF-8"?>

    <LinearLayout android:orientation="vertical" android:layout_height="fill_parent"
    android:layout_width="fill_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

        <EditText android:layout_height="wrap_content" android:layout_width="fill_parent"
    android:inputType="text" android:hint="@string/hnt_te_url" android:id="@+id/te_url"/>

        <Button android:layout_height="wrap_content" android:layout_width="fill_parent"
    android:id="@+id/btn_browse" android:text="@string/lbl_btn_browse"/>

    </LinearLayout>

```

string.xml

```

<string name="hnt_te_url">Enter a website here ...</string>

<string name="lbl_btn_browse">Browse</string>

```

Android manifest.xml

```
<uses-permission android:name="android.permission.INTERNET" />
```

- **Calculator**

MainActivity.java

```

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {

    Button button0 , button1 , button2 , button3 , button4 , button5 , button6 ,
        button7 , button8 , button9 , buttonAdd , buttonSub , buttonDivision ,
        buttonMul , button10 , buttonC , buttonEqual ;

```

```

EditText edt1 ;

float mValueOne , mValueTwo ;

boolean mAddition , mSubtract ,mMultiplication ,mDivision ;

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    button0 = (Button) findViewById(R.id.button0);
    button1 = (Button) findViewById(R.id.button1);
    button2 = (Button) findViewById(R.id.button2);
    button3 = (Button) findViewById(R.id.button3);
    button4 = (Button) findViewById(R.id.button4);
    button5 = (Button) findViewById(R.id.button5);
    button6 = (Button) findViewById(R.id.button6);
    button7 = (Button) findViewById(R.id.button7);
    button8 = (Button) findViewById(R.id.button8);
    button9 = (Button) findViewById(R.id.button9);
    button10 = (Button) findViewById(R.id.button10);
    buttonAdd = (Button) findViewById(R.id.buttonadd);
    buttonSub = (Button) findViewById(R.id.buttonsub);
    buttonMul = (Button) findViewById(R.id.buttonmul);
    buttonDivision = (Button) findViewById(R.id.buttondiv);
    buttonC = (Button) findViewById(R.id.buttonC);
    buttonEqual = (Button) findViewById(R.id.buttoneq1);
    edt1 = (EditText) findViewById(R.id.edt1);

    button1.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            edt1.setText(edt1.getText()+"1");
        }
    });

    button2.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            edt1.setText(edt1.getText()+"2");
        }
    });
}

```

```

}) ;

button3.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edt1.setText(edt1.getText()+"3");
    }
}) ;

button4.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edt1.setText(edt1.getText()+"4");
    }
}) ;

button5.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edt1.setText(edt1.getText()+"5");
    }
}) ;

button6.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edt1.setText(edt1.getText()+"6");
    }
}) ;

button7.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edt1.setText(edt1.getText()+"7");
    }
}) ;

button8.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edt1.setText(edt1.getText()+"8");
    }
}) ;

```

```

button9.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edt1.setText(edt1.getText()+"9");
    }
}) ;

button0.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edt1.setText(edt1.getText()+"0");
    }
}) ;

buttonAdd.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {

        if (edt1 == null) {
            edt1.setText("");
        }else {
            mValueOne = Float.parseFloat(edt1.getText() + "");
            mAddition = true;
            edt1.setText(null);
        }
    }
}) ;

buttonSub.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        mValueOne = Float.parseFloat(edt1.getText() + "");
        mSubtract = true ;
        edt1.setText(null);
    }
}) ;

buttonMul.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        mValueOne = Float.parseFloat(edt1.getText() + "");
        mMultiplication = true ;
        edt1.setText(null);
    }
})

```

```

}) ;

buttonDivision.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        mValueOne = Float.parseFloat(edt1.getText().toString());
        mDivision = true ;
        edt1.setText(null);
    }
}) ;

buttonEqual.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        mValueTwo = Float.parseFloat(edt1.getText().toString());

        if (mAddition == true) {

            edt1.setText(mValueOne + mValueTwo + "");
            mAddition=false;
        }

        if (mSubtract == true) {
            edt1.setText(mValueOne - mValueTwo+"");
            mSubtract=false;
        }

        if (mMultiplication == true) {
            edt1.setText(mValueOne * mValueTwo+"");
            mMultiplication=false;
        }

        if (mDivision == true) {
            edt1.setText(mValueOne / mValueTwo+"");
            mDivision=false;
        }
    }
}) ;

buttonC.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edt1.setText("");
    }
});

```

```
        }
    });
}

button10.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edt1.setText(edt1.getText() + ".");
    }
});
```

activity_main.xml

```
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools" android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:paddingBottom="@dimen/activity_vertical_margin"
    tools:context=".MainActivity"
    android:id="@+id/relative1">

    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/edt1" />

    <Button
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="1"
        android:id="@+id/button1"
        android:layout_marginTop="94dp"
        android:layout_below="@+id/edt1"
        android:layout_toStartOf="@+id/button4"
        android:layout_alignRight="@+id/button4"
        android:layout_alignEnd="@+id/button4" />

    <Button
```

```
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="2"
    android:id="@+id/button2"
    android:layout_alignTop="@+id/button1"
    android:layout_toLeftOf="@+id/button3"
    android:layout_toStartOf="@+id/button3" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="3"
    android:id="@+id/button3"
    android:layout_alignTop="@+id/button2"
    android:layout_centerHorizontal="true" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="4"
    android:id="@+id/button4"
    android:layout_below="@+id/button1"
    android:layout_toLeftOf="@+id/button2" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="5"
    android:id="@+id/button5"
    android:layout_alignBottom="@+id/button4"
    android:layout_alignLeft="@+id/button2"
    android:layout_alignStart="@+id/button2" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="6"
    android:id="@+id/button6"
    android:layout_below="@+id/button3"
```

```
    android:layout_alignLeft="@+id/button3"
    android:layout_alignStart="@+id/button3" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="7"
    android:id="@+id/button7"
    android:layout_below="@+id/button4"
    android:layout_toLeftOf="@+id/button2" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="8"
    android:id="@+id/button8"
    android:layout_below="@+id/button5"
    android:layout_alignLeft="@+id/button5"
    android:layout_alignStart="@+id/button5" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="9"
    android:id="@+id/button9"
    android:layout_below="@+id/button6"
    android:layout_alignLeft="@+id/button6"
    android:layout_alignStart="@+id/button6" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="+"
    android:id="@+id/buttonadd"
    android:layout_alignTop="@+id/button3"
    android:layout_toRightOf="@+id/button3"
    android:layout_marginLeft="46dp"
    android:layout_marginStart="46dp"
    android:layout_alignRight="@+id/edt1"
    android:layout_alignEnd="@+id/edt1" />
```

```
<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="-"
    android:id="@+id/buttonsub"
    android:layout_below="@+id/buttonadd"
    android:layout_alignLeft="@+id/buttonadd"
    android:layout_alignStart="@+id/buttonadd"
    android:layout_alignRight="@+id/buttonadd"
    android:layout_alignEnd="@+id/buttonadd" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="*"
    android:id="@+id/buttonmul"
    android:layout_below="@+id/buttonsub"
    android:layout_alignLeft="@+id/buttonsub"
    android:layout_alignStart="@+id/buttonsub"
    android:layout_alignParentRight="true"
    android:layout_alignParentEnd="true" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text=". "
    android:id="@+id/button10"
    android:layout_below="@+id/button7"
    android:layout_toLeftOf="@+id/button2" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="0"
    android:id="@+id/button0"
    android:layout_below="@+id/button8"
    android:layout_alignLeft="@+id/button8"
    android:layout_alignStart="@+id/button8" />
```

```

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="C"
    android:id="@+id/buttonC"
    android:layout_below="@+id/button9"
    android:layout_alignLeft="@+id/button9"
    android:layout_alignStart="@+id/button9" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="/"
    android:id="@+id/buttonndiv"
    android:layout_below="@+id/buttonmul"
    android:layout_alignLeft="@+id/buttonmul"
    android:layout_alignStart="@+id/buttonmul"
    android:layout_alignRight="@+id/buttonmul"
    android:layout_alignEnd="@+id/buttonmul" />

<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text "="
    android:id="@+id/buttononeql"
    android:layout_below="@+id/button0"
    android:layout_marginTop="37dp"
    android:layout_alignRight="@+id/buttonndiv"
    android:layout_alignEnd="@+id/buttonndiv"
    android:layout_alignLeft="@+id/button10"
    android:layout_alignStart="@+id/button10" />

</RelativeLayout>

```

- **Battery level**

MainActivity.java

```

import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.os.BatteryManager;

```

```

import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.IntentFilter;
import android.view.Menu;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    private TextView batteryPercent;
    private void getBatteryPercentage() {
        BroadcastReceiver batteryLevelReceiver = new BroadcastReceiver() {
            public void onReceive(Context context, Intent intent) {
                context.unregisterReceiver(this);
                int currentLevel = intent.getIntExtra(BatteryManager.EXTRA_LEVEL, -1);
                int scale = intent.getIntExtra(BatteryManager.EXTRA_SCALE, -1);
                int level = -1;
                if (currentLevel >= 0 && scale > 0) {
                    level = (currentLevel * 100) / scale;
                }
                batteryPercent.setText("Battery Level Remaining: " + level + "%");
            }
        };
        IntentFilter batteryLevelFilter = new
        IntentFilter(Intent.ACTION_BATTERY_CHANGED);
        registerReceiver(batteryLevelReceiver, batteryLevelFilter);
    }

    /* @Override */
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        batteryPercent = (TextView) this.findViewById(R.id.batteryLevel);
        getBatteryPercentage();
    }

    //    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        getMenuInflater().inflate(R.menu.menu_main, menu);
        return true;
    }

}

```

activity_main.xml

```
<?xml version="1.0"?>

<RelativeLayout tools:context=".MainActivity" android:layout_height="match_parent"
    android:layout_width="match_parent" xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <TextView android:layout_height="fill_parent" android:layout_width="fill_parent"
        android:textSize="20dp" android:gravity="center_vertical|center_horizontal"
        android:id="@+id/batteryLevel"> </TextView>

</RelativeLayout>
```

- Airplane mode

MainActivity.java

```
import android.support.v7.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.provider.Settings;
import android.view.View;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    @SuppressWarnings("deprecation")
    public void airPlanemodeON(View v) {
        boolean isEnabled = Settings.System.getInt(this.getContentResolver(),
            Settings.System.AIRPLANE_MODE_ON, 0) == 1;
        if (isEnabled == false) {
            modifyAirplanemode(true);
            Toast.makeText(getApplicationContext(), "Airplane Mode ON",
                
```

```

        Toast.LENGTH_LONG).show();
    }
}

public void airPlanemodeOFF(View v) {
    boolean isEnabled = Settings.System.getInt(this.getContentResolver(),
        Settings.System.AIRPLANE_MODE_ON, 0) == 1;
    if (isEnabled == true)// means this is the request to turn ON AIRPLANE mode
    {
        modifyAirplanemode(false);
        Toast.makeText(getApplicationContext(), "Airplane Mode OFF",
            Toast.LENGTH_LONG).show();
    }
}

public void modifyAirplanemode(boolean mode) {
    Settings.System.putInt(getContentResolver(),
        Settings.System.AIRPLANE_MODE_ON, mode ? 1 : 0);// Turning ON/OFF
    Airplane mode.

    Intent intent = new Intent(Intent.ACTION_AIRPLANE_MODE_CHANGED); // creating
    intent.putExtra("state", !mode); // indicate the "state" of airplane mode is
    changed to ON/OFF
    sendBroadcast(intent); // Broadcasting and Intent

}
}

```

activity_main.xml

```

<?xml version="1.0" encoding="UTF-8"?>

<RelativeLayout android:orientation="vertical" android:layout_height="fill_parent"
    android:layout_width="fill_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:text="Airplane Mode ON" android:onClick="airPlanemodeON"
        android:layout_marginTop="34dp" android:layout_centerHorizontal="true"
        android:layout_alignParentTop="true" android:id="@+id/ModeON"/>

    <Button android:layout_height="wrap_content" android:layout_width="wrap_content"

```

```

    android:text="Airplane Mode OFF" android:onClick="airPlanemodeOFF"
    android:layout_marginTop="116dp" android:layout_centerHorizontal="true"
    android:id="@+id/ModeOFF" android:layout_below="@+id/buttonStop"/>

</RelativeLayout>

```

Android manifest.xml

```
<uses-permission android:name="android.permission.WRITE_SETTINGS" />
```

- **Android Features Check**

MainActivity.java

```

import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.content.Context;
import android.content.pm.PackageManager;
import android.view.Menu;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        TextView value = (TextView) findViewById(R.id.res);
        String result = "";
        Context context = this;
        PackageManager packageManager = context.getPackageManager();
        if (packageManager.hasSystemFeature(PackageManager.FEATURE_CAMERA)) {
            result += "Camera: YES";
        } else{
            result += "Camera: NO";
        }
        if (packageManager
                .hasSystemFeature(PackageManager.FEATURE_CAMERA_FRONT)) {
            result += "\nFront facing camera: YES";
        } else{
            result += "\nFront facing camera: NO";
        }
    }
}

```

```

    }

    if (packageManager
        .hasSystemFeature(PackageManager.FEATURE_CAMERA_FLASH) ) {
        result += "\nCamera support flash: YES";
    }else{
        result += "\nCamera support flash: NO";
    }

    if (packageManager.hasSystemFeature(PackageManager.FEATURE_BLUETOOTH) ) {
        result += "\nBluetooth: YES";
    }else{
        result += "\nBluetooth: NO";
    }

    if (packageManager.hasSystemFeature(PackageManager.FEATURE_NFC) ) {
        result += "\nNFC: YES";
    }else{
        result += "\nNFC: NO";
    }

    if (packageManager.hasSystemFeature(PackageManager.FEATURE_MICROPHONE) ) {
        result += "\nMicrophone: YES";
    }else{
        result += "\nMicrophone: NO";
    }

    if (packageManager
        .hasSystemFeature(PackageManager.FEATURE_SENSOR_ACCELEROMETER) ) {
        result += "\nAccelerometer sensor: YES";
    }else{
        result += "\nAccelerometer sensor: NO";
    }

    if (packageManager
        .hasSystemFeature(PackageManager.FEATURE_SENSOR_BAROMETER) ) {
        result += "Barometer (air pressure sensor) :YES";
    }else{
        result += "Barometer (air pressure sensor) :NO";
    }

    if (packageManager
        .hasSystemFeature(PackageManager.FEATURE_SENSOR_COMPASS) ) {
        result += "\nMagnetometer (compass): YES";
    }else{
        result += "\nMagnetometer (compass): NO";
    }

    if (packageManager
        .hasSystemFeature(PackageManager.FEATURE_SENSOR_GYROSCOPE) ) {
        result += "\nGyroscope: YES";
    }else{

```

```

        result += "\nGyroscope: NO";
    }

    if (packageManager
        .hasSystemFeature(PackageManager.FEATURE_SENSOR_LIGHT) ) {
        result += "\nLight sensor: YES";
    } else{
        result += "\nLight sensor: YES";
    }

    if (packageManager
        .hasSystemFeature(PackageManager.FEATURE_SENSOR_PROXIMITY) ) {
        result += "\nProximity sensor: YES";
    } else {
        result += "\nProximity sensor: NO";
    }

    value.setText(result);
}

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    // Inflate the menu; this adds items to the action bar if it is present.
    getMenuInflater().inflate(R.menu.menu_main, menu);
    return true;
}

}

```

activity_main.xml

```

<?xml version="1.0"?>

<RelativeLayout tools:context=".MainActivity" android:layout_height="match_parent"
    android:layout_width="match_parent" xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:id="@+id/res" android:layout_marginLeft="50dip"
        android:layout_marginTop="20dip"/>

</RelativeLayout>

```

- Web View from Youtube

MainActivity.java

```
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.webkit.WebSettings;
import android.webkit.WebView;
import android.webkit.WebViewClient;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        String frameVideo = "<html><body>Video From YouTube<br><iframe width=\"420\" height=\"315\" src=\"https://www.youtube.com/embed/47yJ2XCRLzs\" frameborder=\"0\" allowfullscreen></iframe></body></html>";

        WebView displayYoutubeVideo = (WebView) findViewById(R.id.mWebView);
        displayYoutubeVideo.setWebViewClient(new WebViewClient() {
            @Override
            public boolean shouldOverrideUrlLoading(WebView view, String url) {
                return false;
            }
        });
        WebSettings webSettings = displayYoutubeVideo.getSettings();
        webSettings.setJavaScriptEnabled(true);
        displayYoutubeVideo.loadData(frameVideo, "text/html", "utf-8");
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the action bar if it is present.
        getMenuInflater().inflate(R.menu.menu_main, menu);
        return true;
    }

    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
```

```

    // Handle action bar item clicks here. The action bar will
    // automatically handle clicks on the Home/Up button, so long
    // as you specify a parent activity in AndroidManifest.xml.
    int id = item.getItemId();

    //noinspection SimplifiableIfStatement
    if (id == R.id.action_settings) {
        return true;
    }

    return super.onOptionsItemSelected(item);
}

```

activity_main.xml

```

<?xml version="1.0"?>

<RelativeLayout tools:context=".MainActivity" android:layout_height="match_parent"
    android:layout_width="match_parent" xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:text="Embed and Play YouTube Video in Android WebView Tutorial and Example"/>

    <WebView android:layout_height="match_parent" android:layout_width="match_parent"
        android:id="@+id/mWebView" /> </WebView>

</RelativeLayout>

```

Android manifest.xml

```
<uses-permission android:name="android.permission.INTERNET" />
```

- How to launch alarm application using intent

MainActivity.java

```

import android.content.Intent;
import android.content.pm.PackageManager;
import android.os.Bundle;

```

```

import android.provider.AlarmClock;
import android.support.v7.app.AppCompatActivity;
import android.view.View;

public class MainActivity extends AppCompatActivity {

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    public void browser1(View view) {
        Intent i = new Intent(AlarmClock.ACTION_SET_ALARM);
        startActivity(i);
    }
}

```

activity_main.xml

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="vertical" >

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="alarm"
        android:layout_alignParentBottom="true"
        android:layout_centerHorizontal="true"
        android:layout_marginBottom="177dp"
        android:onClick="browser1" />
</LinearLayout>

```

Android manifest.xml

```

<uses-permission android:name="com.android.alarm.permission.SET_ALARM"/>

```

- **Battery Information**

MainActivity.java

```
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.IntentFilter;
import android.os.BatteryManager;
import android.os.Bundle;
import android.widget.TextView;
import android.support.v7.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    private TextView batteryLevel, batteryVoltage, batteryTemperature,
        batteryTechnology, batteryStatus, batteryHealth;

    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        batteryLevel = (TextView) findViewById(R.id.batterylevel);
        batteryVoltage = (TextView) findViewById(R.id.batteryvoltage);
        batteryTemperature = (TextView) findViewById(R.id.batterytemperature);
        batteryTechnology = (TextView) findViewById(R.id.batterytechology);
        batteryStatus = (TextView) findViewById(R.id.batterystatus);
        batteryHealth = (TextView) findViewById(R.id.batteryhealth);

        this.registerReceiver(this.myBatteryReceiver,
            new IntentFilter(Intent.ACTION_BATTERY_CHANGED));
    }

    private BroadcastReceiver myBatteryReceiver
        = new BroadcastReceiver() {

    @Override
    public void onReceive(Context arg0, Intent arg1) {
        // TODO Auto-generated method stub
    }
}
```

```

if (arg1.getAction().equals(Intent.ACTION_BATTERY_CHANGED)) {
    batteryLevel.setText("Level: "
        + String.valueOf(arg1.getIntExtra("level", 0)) + "%");
    batteryVoltage.setText("Voltage: "
        + String.valueOf((float)arg1.getIntExtra("voltage", 0)/1000) +
    "V");
    batteryTemperature.setText("Temperature: "
        + String.valueOf((float)arg1.getIntExtra("temperature", 0)/10) +
    "c");
    batteryTechnology.setText("Technology: " +
    arg1.getStringExtra("technology"));

    int status = arg1.getIntExtra("status",
BatteryManager.BATTERY_STATUS_UNKNOWN);

    String strStatus;
    if (status == BatteryManager.BATTERY_STATUS_CHARGING) {
        strStatus = "Charging";
    } else if (status == BatteryManager.BATTERY_STATUS_DISCHARGING) {
        strStatus = "Dis-charging";
    } else if (status == BatteryManager.BATTERY_STATUS_NOT_CHARGING) {
        strStatus = "Not charging";
    } else if (status == BatteryManager.BATTERY_STATUS_FULL) {
        strStatus = "Full";
    } else {
        strStatus = "Unknown";
    }
    batteryStatus.setText("Status: " + strStatus);

    int health = arg1.getIntExtra("health",
BatteryManager.BATTERY_HEALTH_UNKNOWN);

    String strHealth;
    if (health == BatteryManager.BATTERY_HEALTH_GOOD) {
        strHealth = "Good";
    } else if (health == BatteryManager.BATTERY_HEALTH_OVERHEAT) {
        strHealth = "Over Heat";
    } else if (health == BatteryManager.BATTERY_HEALTH_DEAD) {
        strHealth = "Dead";
    } else if (health == BatteryManager.BATTERY_HEALTH_OVER_VOLTAGE) {
        strHealth = "Over Voltage";
    } else if (health ==
BatteryManager.BATTERY_HEALTH_UNSPECIFIED_FAILURE) {
        strHealth = "Unspecified Failure";
    } else{
        strHealth = "Unknown";
    }
}

```

```

        }

        batteryHealth.setText("Health: " + strHealth);

    }

}

};

}

```

activity_main.xml

```

<?xml version="1.0" encoding="utf-8" ?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    >
    <TextView
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="@string/hello"
        />
    <TextView
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Battery Info."
        />
    <TextView
        android:id="@+id/batterylevel"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Battery Level:"
        />
    <TextView
        android:id="@+id/batteryvoltage"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Battery Voltage:"
        />
    <TextView
        android:id="@+id/batterytemperature"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"

```

```

        android:text="Battery Temperature:"
    />
<TextView
        android:id="@+id/batterytechnology"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Technology:"
    />
<TextView
        android:id="@+id/batterystatus"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Status:"
    />
<TextView
        android:id="@+id/batteryhealth"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Health:"
    />
</LinearLayout>
```

- **Change the name of the application**

Note: If you want to change the application name (from MyApplication to MyApplication5496), you have to replace the statement

```
<string name="app_name">My Application</string>
```

in **string.xml** by the statement

```
<string name="app_name">My Application5496</string>
```

- **Brightness Control**

MainActivity.java

```

import android.support.v7.app.AppCompatActivity;
import android.content.ContentResolver;
import android.os.Bundle;
import android.provider.Settings.SettingNotFoundException;
```

```

import android.provider.Settings.System;
import android.util.Log;
import android.view.Window;
import android.view.WindowManager.LayoutParams;
import android.widget.SeekBar;
import android.widget.SeekBar.OnSeekBarChangeListener;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {
    private SeekBar brightbar;

    // Variable to store brightness value
    private int brightness;
    // Content resolver used as a handle to the system's settings
    private ContentResolver cResolver;
    // Window object, that will store a reference to the current window
    private Window window;

    TextView txtPerc;

    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Instantiate seekbar object
        brightbar = (SeekBar) findViewById(R.id.brightbar);

        txtPerc = (TextView) findViewById(R.id.txtPercentage);

        // Get the content resolver
        cResolver = getContentResolver();

        // Get the current window
        window = getWindow();

        // Set the seekbar range between 0 and 255
        brightbar.setMax(255);
        // Set the seek bar progress to 1
        brightbar.setKeyProgressIncrement(1);

        try {
            // Get the current system brightness

```

```

brightness = System.getInt(cResolver, System.SCREEN_BRIGHTNESS);
} catch (SettingNotFoundException e) {
    // Throw an error case it couldn't be retrieved
    Log.e("Error", "Cannot access system brightness");
    e.printStackTrace();
}

// Set the progress of the seek bar based on the system's brightness
brightbar.setProgress(brightness);

// Register OnSeekBarChangeListener, so it can actually change values
brightbar.setOnSeekBarChangeListener(new OnSeekBarChangeListener() {
    public void onStopTrackingTouch(SeekBar seekBar) {
        // Set the system brightness using the brightness variable value
        System.putInt(cResolver, System.SCREEN_BRIGHTNESS, brightness);
        // Get the current window attributes
        LayoutParams layoutpars = window.getAttributes();
        // Set the brightness of this window
        layoutpars.screenBrightness = brightness / (float) 255;
        // Apply attribute changes to this window
        window.setAttributes(layoutpars);
    }

    public void onStartTrackingTouch(SeekBar seekBar) {
        // Nothing handled here
    }

    public void onProgressChanged(SeekBar seekBar, int progress,
                                boolean fromUser) {
        // Set the minimal brightness level
        // if seek bar is 20 or any value below
        if (progress <= 20) {
            // Set the brightness to 20
            brightness = 20;
        } else // brightness is greater than 20
        {
            // Set brightness variable based on the progress bar
            brightness = progress;
        }
        // Calculate the brightness percentage
        float perc = (brightness / (float) 255) * 100;
        // Set the brightness percentage
        txtPerc.setText((int) perc + "%");
    }
}

```

```
    });
}
}
```

activity_main.xml

```
<?xml version="1.0" encoding="UTF-8"?>

<LinearLayout android:orientation="vertical" android:layout_height="fill_parent"
    android:layout_width="fill_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <TextView android:layout_height="wrap_content" android:layout_width="fill_parent"
        android:text="Slide the bar to change the brightness:"/>

    <SeekBar android:layout_height="wrap_content" android:layout_width="fill_parent"
        android:layout_marginRight="30dip" android:layout_marginLeft="30dip"
        android:id="@+id/brightbar"> </SeekBar>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:text="0%" android:id="@+id/txtPercentage"
        android:textAppearance="?android:attr/textAppearanceLarge"
        android:layout_gravity="center"/>

</LinearLayout>
```

Android manifest.xml

```
<uses-permission android:name="android.permission.WRITE_SETTINGS"> </uses-permission>
```

- Wifi State Acess information

MainActivity.java

```
import android.support.v7.app.AppCompatActivity;
import java.util.List;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.IntentFilter;
```

```

import android.net.wifi.ScanResult;
import android.net.wifi.WifiManager;
import android.os.Bundle;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.ListView;

public class MainActivity extends AppCompatActivity {
    private WifiManager mainWifi;
    private WifiReceiver receiverWifi;
    private Button btnRefresh;
    ListAdapter adapter;
    ListView lvWifiDetails;
    List<ScanResult> wifiList;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        lvWifiDetails = (ListView) findViewById(R.id.lvWifiDetails);
        btnRefresh = (Button) findViewById(R.id.btnRefresh);
        mainWifi = (WifiManager) getSystemService(Context.WIFI_SERVICE);
        receiverWifi = new WifiReceiver();
        registerReceiver(receiverWifi, new IntentFilter(
                WifiManager.SCAN_RESULTS_AVAILABLE_ACTION));
        scanWifiList();

        btnRefresh.setOnClickListener(new OnClickListener() {

            @Override
            public void onClick(View v) {
                scanWifiList();

            }
        });
    }

    private void setAdapter() {
        adapter = new ListAdapter(getApplicationContext(), wifiList);
        lvWifiDetails.setAdapter(adapter);
    }
}

```

```

    private void scanWifiList() {
        mainWifi.startScan();
        wifiList = mainWifi.getScanResults();

        setAdapter();

    }

    class WifiReceiver extends BroadcastReceiver {
        public void onReceive(Context c, Intent intent) {
        }
    }
}

```

ListAdapter.java

```

import java.util.List;
import android.content.Context;
import android.net.wifi.ScanResult;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.BaseAdapter;
import android.widget.TextView;

public class ListAdapter extends BaseAdapter {

    Context context;
    LayoutInflater inflater;
    List<ScanResult> wifiList;

    public ListAdapter(Context context, List<ScanResult> wifiList) {
        this.context = context;
        this.wifiList = wifiList;
        inflater = (LayoutInflater) context
            .getSystemService(Context.LAYOUT_INFLATER_SERVICE);
    }

    @Override
    public int getCount() {
        return wifiList.size();
    }
}

```

```

@Override
public Object getItem(int position) {
    return null;
}

@Override
public long getItemId(int position) {
    return 0;
}

@Override
public View getView(int position, View convertView, ViewGroup parent) {
    Holder holder;
    View view = convertView;
    if (view == null) {
        view = inflater.inflate(R.layout.dataset, null);
        holder = new Holder();
        holder.tvDetails = (TextView) view.findViewById(R.id.tvDetails);

        view.setTag(holder);
    } else {
        holder = (Holder) view.getTag();
    }
    holder.tvDetails.setText("SSID :: " + wifiList.get(position).SSID
            + "\nStrength :: " + wifiList.get(position).level
            + "\nBSSID :: " + wifiList.get(position).BSSID
            + "\nChannel :: "
            + convertFrequencyToChannel(wifiList.get(position).frequency)
            + "\nFrequency :: " + wifiList.get(position).frequency
            + "\nCapability :: " + wifiList.get(position).capabilities);

    return view;
}

public static int convertFrequencyToChannel(int freq) {
    if (freq >= 2412 && freq <= 2484) {
        return (freq - 2412) / 5 + 1;
    } else if (freq >= 5170 && freq <= 5825) {
        return (freq - 5170) / 5 + 34;
    } else {
        return -1;
    }
}

```

```

class Holder {
    TextView tvDetails;

}
}

```

activity_main.xml

```

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/LinearLayout1"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context="${relativePackage}.${activityClass}" >

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="0.9"
        android:orientation="vertical" >

        <ListView
            android:id="@+id/lvWifiDetails"
            android:layout_width="match_parent"
            android:layout_height="wrap_content" >
        </ListView>
    </LinearLayout>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="0.1"
        android:orientation="vertical" >

        <Button
            android:id="@+id/btnRefresh"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:layout_margin="5dp"
            android:text="Refresh" />
    </LinearLayout>

```

```
</LinearLayout>
```

dataset.xml

```
<?xml version="1.0" encoding="utf-8" ?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical" >

    <TextView
        android:id="@+id/tvDetails"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="5dp"
        android:text="Medium Text"
        android:textAppearance="?android:attr/textAppearanceMedium"
        android:textColor="#000000" />

</LinearLayout>
```

Android manifest.xml

```
<uses-permission android:name="android.permission.ACCESS_NETWORK_STATE" />

<uses-permission android:name="android.permission.ACCESS_WIFI_STATE" />

<uses-permission android:name="android.permission.CHANGE_WIFI_STATE" />
<uses-permission android:name="android.permission.CHANGE_WIFI_STATE" />
```

- Battery level in percentage (picture)

MainActivity.java

```
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
```

```

import android.content.IntentFilter;
import android.widget.ProgressBar;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    private BroadcastReceiver mBatInfoReceiver = new BroadcastReceiver() {

        @Override
        public void onReceive(Context c, Intent i) {
            int level = i.getIntExtra("level", 0);
            ProgressBar pb = (ProgressBar) findViewById(R.id.progressbar);
            pb.setProgress(level);
            TextView tv = (TextView) findViewById(R.id.textfield);
            tv.setText("Battery Level: " + Integer.toString(level) + "%");
        }
    };

    /**
     * Called when the activity is first created.
     */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        registerReceiver(mBatInfoReceiver, new IntentFilter(
                Intent.ACTION_BATTERY_CHANGED));
    }
}

```

activity_main.xml

```

<?xml version="1.0" encoding="UTF-8" ?>

    <LinearLayout android:orientation="vertical" android:layout_height="fill_parent"
    android:layout_width="fill_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

        <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:layout_marginTop="40dip" android:layout_gravity="center"
        android:id="@+id/textfield"/>

        <ProgressBar android:layout_height="wrap_content"
        android:layout_width="wrap_content" android:layout_marginTop="20dip"
        android:layout_gravity="center" android:id="@+id/progressbar"

```

```

    android:minWidth="200dip" android:minHeight="100dip" android:maxWidth="300dip"
    android:maxHeight="500dip" android:max="100"
    style="?android:attr/progressBarStyleHorizontal"/>

</LinearLayout>

```

- **Insert and GET CONTACT**

MainActivity.java

```

import android.support.v7.app.AppCompatActivity;
import android.app.Activity;
import android.content.Intent;
import android.database.Cursor;
import android.net.Uri;
import android.os.Bundle;
import android.provider.ContactsContract;
import android.provider.ContactsContract.Contacts;
import android.provider.ContactsContract.Insert;
import android.util.Log;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity implements OnClickListener {

    private EditText edtName, edtNumber;
    private static final int CALL_CONTACT_PICKER = 200;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        edtName = (EditText) findViewById(R.id.edtName);
        edtNumber = (EditText) findViewById(R.id.edtPhone);
        findViewById(R.id.btnInsert).setOnClickListener(this);
        findViewById(R.id.btnGetContact).setOnClickListener(this);
    }

    @Override
    public void onClick(View v) {

```

```

switch (v.getId()) {
    case R.id.btnInsert:
        Intent i = new Intent(Intent.ACTION_INSERT_OR_EDIT);
        i.setType(Contacts.CONTENT_ITEM_TYPE);
        i.putExtra(Insert.NAME, edtName.getText().toString());
        i.putExtra(Insert.PHONE, edtNumber.getText().toString());
        startActivity(i);
        break;
    case R.id.btnGetContact:
        Intent callContactPickerIntent = new Intent(Intent.ACTION_PICK,
                ContactsContract.Contacts.CONTENT_URI);
        // filters contact with phone numbers
        callContactPickerIntent
                .setType(ContactsContract.CommonDataKinds.Phone.CONTENT_TYPE);
        startActivityForResult(callContactPickerIntent,
                CALL_CONTACT_PICKER);
        break;
    default:
        break;
}
}

@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data)
{
    if (resultCode == RESULT_OK) {
        Cursor cursor = null;

        Uri result = data.getData();
        // String id = result.getLastPathSegment();

        cursor = getContentResolver().query(result, null, null, null, null);
        // String contactId=cursor.get;
        if (cursor == null) {

            Toast.makeText(this, "Selection Fail", Toast.LENGTH_LONG)
                    .show();
            return;
        }
        if (!cursor.moveToFirst()) {

            cursor.close();
        }
    }
}

```

```

        Toast.makeText(this, "Selection Fail", Toast.LENGTH_LONG)
            .show();
    }

    String contactName = cursor
        .getString(cursor

.getColumnIndex((ContactsContract.CommonDataKinds.Phone.DISPLAY_NAME)

        .toString().trim()));

    String contactNumber = cursor
        .getString(cursor

.getColumnIndex((ContactsContract.CommonDataKinds.Phone.NUMBER)));

    switch (requestCode) {

        case CALL_CONTACT_PICKER:
            Toast.makeText(this,
                "Name :" + contactName + "Number :" + contactNumber,
                Toast.LENGTH_LONG).show();
            break;

        default:
            break;
    }

    cursor.close();

} else {
    // gracefully handle failure
    Log.w("Auto Respond", "Warning: activity result not ok");
}
}

}

```

activity_main.xml

```

<?xml version="1.0" encoding="UTF-8"?>

<LinearLayout android:stretchColumns="1" android:orientation="vertical"
    android:gravity="center" android:layout_height="match_parent"
    android:layout_width="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">

```

```

<EditText android:layout_height="wrap_content" android:layout_width="match_parent"
    android:hint="Name" android:id="@+id/edtName"/>

<EditText android:layout_height="wrap_content" android:layout_width="match_parent"
    android:hint="Number" android:id="@+id/edtPhone" android:inputType="phone"/>

<Button android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:id="@+id	btnInsert" android:text="Insert Contact"/>

<Button android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:id="@+id	btnGetContact" android:text="Get Contact"/>

</LinearLayout>

```

- IP Address

MainActivity.java

```

import android.support.v7.app.AppCompatActivity;
import java.net.InetAddress;
import java.net.NetworkInterface;
import java.util.Enumeration;
import android.content.Context;
import android.net.ConnectivityManager;
import android.net.NetworkInfo;
import android.net.wifi.WifiManager;
import android.os.Bundle;
import android.text.format.Formatter;
import android.util.Log;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    Button button;
    TextView textview;
    String IPEndPoint;
    Boolean IPValue;
    @Override

```

```

protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    button = (Button) findViewById(R.id.button1);
    textView = (TextView) findViewById(R.id.textView1);

    button.setOnClickListener(new View.OnClickListener() {

        @Override
        public void onClick(View v) {
            // TODO Auto-generated method stub

            NetwordDetect();

        }
    });
}

//Check if Internet Network is active
private void NetwordDetect() {

    boolean WIFI = false;

    boolean MOBILE = false;

    ConnectivityManager CM = (ConnectivityManager)
getSystemService(Context.CONNECTIVITY_SERVICE);

    NetworkInfo[] networkInfo = CM.getAllNetworkInfo();

    for (NetworkInfo netInfo : networkInfo) {

        if (netInfo.getTypeName().equalsIgnoreCase("WIFI"))

            if (netInfo.isConnected())

                WIFI = true;

        if (netInfo.getTypeName().equalsIgnoreCase("MOBILE"))

            if (netInfo.isConnected())

```

```

        MOBILE = true;
    }

    if(WIFI == true) {

    {
        IPaddress = GetDeviceipWiFiData();
        textview.setText(IPaddress);

    }

    if(MOBILE == true)
    {

        IPaddress = GetDeviceipMobileData();
        textview.setText(IPaddress);

    }

}

public String GetDeviceipMobileData() {
    try {
        for (Enumeration<NetworkInterface> en =
NetworkInterface.getNetworkInterfaces() {
            en.hasMoreElements(); {
                NetworkInterface networkinterface = en.nextElement();
                for (Enumeration<InetAddress> enumIpAddr =
networkinterface.getInetAddresses(); enumIpAddr.hasMoreElements();) {
                    InetAddress inetAddress = enumIpAddr.nextElement();
                    if (!inetAddress.isLoopbackAddress()) {
                        return inetAddress.getHostAddress().toString();
                    }
                }
            }
        } catch (Exception ex) {
            Log.e("Current IP", ex.toString());
        }
        return null;
    }
}

```

```

public String GetDeviceipWiFiData()
{
    WifiManager wm = (WifiManager) getSystemService(WIFI_SERVICE);

    @SuppressWarnings("deprecation")
    String ip =
    Formatter.formatIpAddress(wm.getConnectionInfo().getIpAddress());

    return ip;
}

}

```

activity_main.xml

```

<?xml version="1.0"?>

<RelativeLayout
    tools:context="com.displayipaddress_android_examples.com.MainActivity"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:layout_height="match_parent" android:layout_width="match_parent"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:textAppearance="?android:attr/textAppearanceLarge" android:text="IP Address
        display Here" android:layout_marginTop="188dp" android:layout_centerHorizontal="true"
        android:layout_alignParentTop="true" android:id="@+id/textView1"/>

    <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:text="Click here to get current device " android:layout_marginTop="22dp"
        android:layout_centerHorizontal="true" android:id="@+id/button1"
        android:layout_below="@+id/textView1"/>

</RelativeLayout>

```

Android manifest.xml

```
<uses-permission android:name="android.permission.INTERNET"/>

<uses-permission android:name="android.permission.ACCESS_NETWORK_STATE"/>

<uses-permission android:name="android.permission.ACCESS_WIFI_STATE"/>
```

- **ZoomInOut WebView**

MainActivity.java

```
import android.support.v7.app.AppCompatActivity;
import android.app.Activity;
import android.os.Bundle;
import android.webkit.WebSettings;
import android.webkit.WebView;

public class MainActivity extends AppCompatActivity {

    WebView Webview;
    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        Webview = (WebView) findViewById(R.id.webView1);
        WebSettings webSetting = Webview.getSettings();

        //This function enable Zoom in Zoom out Feature on WebView
        webSetting.setBuiltInZoomControls(true);

        Webview.setWebViewClient(new WebViewClient());
        Webview.loadUrl("http://google.com");
    }

    private class WebViewClient extends android.webkit.WebViewClient
    {
        @Override
```

```

    public boolean shouldOverrideUrlLoading(WebView view, String url)
    {
        return super.shouldOverrideUrlLoading(view, url);
    }
}

```

activity_main.xml

```

<?xml version="1.0"?>

<RelativeLayout tools:context=".MainActivity"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:layout_height="match_parent" android:layout_width="match_parent"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <WebView android:layout_height="match_parent" android:layout_width="match_parent"
        android:layout_centerHorizontal="true" android:layout_alignParentTop="true"
        android:id="@+id/webView1"/>

</RelativeLayout>

```

Android manifest.xml

```
<uses-permission android:name="android.permission.INTERNET"/>
```

- Enable GPS Location Service

MainActivity.java

```

import android.support.v7.app.AppCompatActivity;
import android.content.Context;
import android.content.Intent;
import android.location.LocationManager;
import android.os.Bundle;
import android.provider.Settings;
import android.view.View;

```

```

import android.widget.Button;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    Button button;
    Context context;
    Intent intent1, intent2;
    TextView textView;
    LocationManager locationManager ;
    boolean GpsStatus ;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        button = (Button) findViewById(R.id.button1);

        textView = (TextView) findViewById(R.id.textView1);

        context = getApplicationContext();

        CheckGpsStatus();

        button.setOnClickListener(new View.OnClickListener() {

            @Override
            public void onClick(View v) {
                // TODO Auto-generated method stub

                intent1 = new Intent(Settings.ACTION_LOCATION_SOURCE_SETTINGS);
                startActivity(intent1);

            }
        });

    }

    public void CheckGpsStatus() {

        locationManager =
        (LocationManager) context.getSystemService(Context.LOCATION_SERVICE);

        GpsStatus =

```

```

locationManager.isProviderEnabled(LocationManager.GPS_PROVIDER);

    if(GpsStatus == true)
    {
        textView.setText("Location Services Is Enabled");
    }else {
        textView.setText("Location Services Is Disabled");
    }

}

}

```

activity_main.xml

```

<?xml version="1.0"?>

<RelativeLayout tools:context=".MainActivity"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:layout_height="match_parent" android:layout_width="match_parent"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:text="Click Here to Enable Disable GPS location service programmatically in
        android" android:layout_marginTop="70dp" android:layout_centerHorizontal="true"
        android:layout_alignTop="@+id/textView1" android:id="@+id/button1"/>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:text="location service Stauts Shows Here" android:layout_marginTop="132dp"
        android:layout_centerHorizontal="true" android:id="@+id/textView1"
        android:textAppearance="?android:attr/textAppearanceLarge" android:gravity="center"
        android:layout_alignParentTop="true"/>

</RelativeLayout>

```

Android manifest.xml

```
<uses-permission android:name="android.permission.READ_PHONE_STATE"/>

<uses-permission android:name="android.permission.INTERNET"/>

<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"/>

<uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION"/>
```

- **BLUETOOTH**

MainActivity.java

```
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.bluetooth.BluetoothAdapter;
import android.bluetooth.BluetoothDevice;
import android.content.BroadcastReceiver;
import android.content.Context;
import java.util.Set;
import android.content.Intent;
import android.content.IntentFilter;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.ListView;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    private static final int REQUEST_ENABLE_BT = 1;
    private Button onBtn;
    private Button offBtn;
    private Button listBtn;
    private Button findBtn;
    private TextView text;
    private BluetoothAdapter myBluetoothAdapter;
    private Set<BluetoothDevice> pairedDevices;
    private ListView myListview;
    private ArrayAdapter<String> BTArrayAdapter;
```

```

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    // take an instance of BluetoothAdapter - Bluetooth radio
    myBluetoothAdapter = BluetoothAdapter.getDefaultAdapter();
    if(myBluetoothAdapter == null) {
        onBtn.setEnabled(false);
        offBtn.setEnabled(false);
        listBtn.setEnabled(false);
        findBtn.setEnabled(false);
        text.setText("Status: not supported");

        Toast.makeText(getApplicationContext(), "Your device does not support
Bluetooth",
                Toast.LENGTH_LONG).show();
    } else {
        text = (TextView) findViewById(R.id.text);
        onBtn = (Button)findViewById(R.id.turnOn);
        onBtn.setOnClickListener(new OnClickListener() {

            @Override
            public void onClick(View v) {
                // TODO Auto-generated method stub
                on(v);
            }
        });

        offBtn = (Button)findViewById(R.id.turnOff);
        offBtn.setOnClickListener(new OnClickListener() {

            @Override
            public void onClick(View v) {
                // TODO Auto-generated method stub
                off(v);
            }
        });

        listBtn = (Button)findViewById(R.id.paired);
        listBtn.setOnClickListener(new OnClickListener() {

            @Override

```

```

    public void onClick(View v) {
        // TODO Auto-generated method stub
        list(v);
    }

});;

findBtn = (Button)findViewById(R.id.search);
findBtn.setOnClickListener(new OnClickListener() {

    @Override
    public void onClick(View v) {
        // TODO Auto-generated method stub
        find(v);
    }
});;

myListView = (ListView)findViewById(R.id.listView1);

// create the arrayAdapter that contains the BTDevices, and set it to the
ListView
BTArrayAdapter = new ArrayAdapter<String>(this,
android.R.layout.simple_list_item_1);
myListView.setAdapter(BTArrayAdapter);
}

}

public void on(View view){
    if (!myBluetoothAdapter.isEnabled()) {
        Intent turnOnIntent = new Intent(BluetoothAdapter.ACTION_REQUEST_ENABLE);
        startActivityForResult(turnOnIntent, REQUEST_ENABLE_BT);

        Toast.makeText(getApplicationContext(),"Bluetooth turned on",
        Toast.LENGTH_LONG).show();
    }
    else{
        Toast.makeText(getApplicationContext(),"Bluetooth is already on",
        Toast.LENGTH_LONG).show();
    }
}

@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    // TODO Auto-generated method stub
    if(requestCode == REQUEST_ENABLE_BT){

```

```

        if(myBluetoothAdapter.isEnabled()) {
            text.setText("Status: Enabled");
        } else {
            text.setText("Status: Disabled");
        }
    }

}

public void list(View view) {
    // get paired devices
    pairedDevices = myBluetoothAdapter.getBondedDevices();

    // put it's one to the adapter
    for(BluetoothDevice device : pairedDevices)
        BTArrayAdapter.add(device.getName() + "\n" + device.getAddress());

    Toast.makeText(getApplicationContext(), "Show Paired Devices",
        Toast.LENGTH_SHORT).show();
}

final BroadcastReceiver bReceiver = new BroadcastReceiver() {
    public void onReceive(Context context, Intent intent) {
        String action = intent.getAction();
        // When discovery finds a device
        if (BluetoothDevice.ACTION_FOUND.equals(action)) {
            // Get the BluetoothDevice object from the Intent
            BluetoothDevice device =
intent.getParcelableExtra(BluetoothDevice.EXTRA_DEVICE);
            // add the name and the MAC address of the object to the arrayAdapter
            BTArrayAdapter.add(device.getName() + "\n" + device.getAddress());
            BTArrayAdapter.notifyDataSetChanged();
        }
    }
};

public void find(View view) {
    if (myBluetoothAdapter.isDiscovering()) {
        // the button is pressed when it discovers, so cancel the discovery
        myBluetoothAdapter.cancelDiscovery();
    } else {
        BTArrayAdapter.clear();
        myBluetoothAdapter.startDiscovery();
    }
}

```

```

        registerReceiver(bReceiver, new
IntentFilter(BluetoothDevice.ACTION_FOUND));
    }
}

public void off(View view){
    myBluetoothAdapter.disable();
    text.setText("Status: Disconnected");

    Toast.makeText(getApplicationContext(), "Bluetooth turned off",
Toast.LENGTH_LONG).show();
}

@Override
protected void onDestroy() {
    // TODO Auto-generated method stub
    super.onDestroy();
    unregisterReceiver(bReceiver);
}
}

```

activity_main.xml

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity" >

    <TextView
        android:id="@+id/text"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textAppearance="?android:attr/textAppearanceLarge"
        android:text="@string/Text" />

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal"
        android:layout_marginTop="30dp" >

```

```
<Button
    android:id="@+id/turnOn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/on" />

<Button
    android:id="@+id/turnOff"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/off" />

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="vertical"
    android:layout_marginTop="80dp" >

    <Button
        android:id="@+id/paired"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/List" />

    <Button
        android:id="@+id/search"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/Find" />

    <ListView
        android:id="@+id/listView1"
        android:layout_width="fill_parent"
        android:layout_height="200dp" >

        </ListView>

    </LinearLayout>

</RelativeLayout>
```

String.xml

```
<string name="Text">Status: -</string>

<string name="on">Turn On</string>

<string name="off">Turn Off</string>

<string name="List">List paired Devices</string>

<string name="Find">Search new Devices / Cancel</string>
```

Android manifest.xml

```
<uses-permission android:name="android.permission.BLUETOOTH"/>

<uses-permission android:name="android.permission.BLUETOOTH_ADMIN"/>
```

- CHECK GPS LOCATION SERVICE

MainActivity.java

```
import android.support.v7.app.AppCompatActivity;
import android.app.Activity;
import android.content.Context;
import android.location.LocationManager;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    Button button;
    TextView textView;
    Context context;
    LocationManager locationManager ;
    boolean GpsStatus ;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
```

```

super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);

button = (Button) findViewById(R.id.button1);
textview = (TextView) findViewById(R.id.textView1);

context = getApplicationContext();

button.setOnClickListener(new View.OnClickListener() {

    @Override
    public void onClick(View v) {
        // TODO Auto-generated method stub

        CheckGpsStatus() ;

        if(GpsStatus == true)
        {
            textview.setText("Location Services Is Enabled");
        }else {
            textview.setText("Location Services Is Disabled");
        }

    }
}) ;
}

public void CheckGpsStatus(){

locationManager =
(LocationManager) context.getSystemService(Context.LOCATION_SERVICE);

GpsStatus =
locationManager.isProviderEnabled(LocationManager.GPS_PROVIDER);
}
}

```

activity_main.xml

```

<?xml version="1.0"?>

<RelativeLayout tools:context=".MainActivity"

```

```

    android:paddingTop="@dimen/activity_vertical_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:layout_height="match_parent" android:layout_width="match_parent"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android">

        <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Click Here to Check GPS location services is enabled or not in Android"
    android:layout_centerVertical="true" android:layout_centerHorizontal="true"
    android:id="@+id/button1"/>

        <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="GPS Status" android:layout_centerHorizontal="true"
    android:id="@+id/textView1" android:gravity="center"
    android:textAppearance="?android:attr/textAppearanceLarge"
    android:layout_marginBottom="48dp" android:layout_above="@+id/button1"/>

</RelativeLayout>

```

Android manifest.xml

```
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
```

- View video from internet

MainActivity.java

```

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.MediaController;
import android.widget.VideoView;

public class MainActivity extends AppCompatActivity {

    VideoView videoview ;
    MediaController mediacontroller;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}

```

```

videoview = (VideoView) findViewById(R.id.videoView1);
mediacontroller = new MediaController(MainActivity.this);

videoview.setVideoPath(
    "http://www.android-examples.com/wp-
content/uploads/2016/01/sample_video.3gp");

mediacontroller.setAnchorView(videoview);

videoview.setMediaController(mediacontroller);

videoview.start();

}
}

```

activity_main.xml

```

<?xml version="1.0" ?>

<RelativeLayout android:background="#02bf95" tools:context=".MainActivity"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:layout_height="match_parent" android:layout_width="match_parent"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <VideoView android:layout_height="wrap_content"
        android:layout_width="wrap_content" android:layout_centerVertical="true"
        android:layout_centerHorizontal="true" android:id="@+id/videoView1"/>

</RelativeLayout>

```

Android manifest.xml

```
<uses-permission android:name="android.permission.INTERNET" />
```

- Play music from internet

MainActivity.java

```

import android.support.v7.app.AppCompatActivity;
import java.io.IOException;
import android.media.AudioManager;
import android.media.MediaPlayer;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {

    Button buttonStop,buttonStart ;

    String AudioURL = "http://www.android-examples.com/wp-
content/uploads/2016/04/Thunder-rumble.mp3";

    MediaPlayer mediaplayer;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        buttonStart = (Button)findViewById(R.id.button1);
        buttonStop = (Button)findViewById(R.id.button2);

        mediaplayer = new MediaPlayer();
        mediaplayer.setAudioStreamType(AudioManager.STREAM_MUSIC);

        buttonStart.setOnClickListener(new View.OnClickListener() {

            @Override
            public void onClick(View v) {
                // TODO Auto-generated method stub

                try {

                    mediaplayer.setDataSource( AudioURL );
                    mediaplayer.prepare();

```

```

        } catch (IllegalArgumentException e) {
            // TODO Auto-generated catch block
            e.printStackTrace();
        } catch (SecurityException e) {
            // TODO Auto-generated catch block
            e.printStackTrace();
        } catch (IllegalStateException e) {
            // TODO Auto-generated catch block
            e.printStackTrace();
        } catch (IOException e) {
            // TODO Auto-generated catch block
            e.printStackTrace();
        }

        mediaplayer.start();

    }

});;

buttonStop.setOnClickListener(new View.OnClickListener() {

    @Override
    public void onClick(View v) {
        // TODO Auto-generated method stub

        mediaplayer.stop();

    }
});;
}
}

```

activity_main.xml

```

<?xml version="1.0"?>

<RelativeLayout tools:context=".MainActivity"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"

```

```

    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:layout_height="match_parent" android:layout_width="match_parent"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android">

        <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Stop Music From URL" android:layout_centerHorizontal="true"
    android:layout_below="@+id/button1" android:id="@+id/button2"/>

        <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Start Music From URL" android:layout_centerHorizontal="true"
    android:id="@+id/button1" android:layout_marginTop="157dp"
    android:layout_alignParentTop="true"/>

</RelativeLayout>

```

Android manifest.xml

```
<uses-permission android:name="android.permission.INTERNET"/>
```

- Phone MODEL and Name

MainActivity.java

```

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {
    String DeviceModel, DeviceName;
    TextView model, device;
    Button getboth;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        model = (TextView) findViewById(R.id.textView1);

```

```
device = (TextView) findViewById(R.id.textView2);

getboth = (Button) findViewById(R.id.button1);

getboth.setOnClickListener(new View.OnClickListener() {

    @Override
    public void onClick(View v) {

        DeviceModel= android.os.Build.MODEL;
        DeviceName= android.os.Build.MANUFACTURER;

        model.setText(DeviceModel);
        device.setText(DeviceName);

    }
});
```

activity_main.xml

```
<?xml version="1.0"?>

<RelativeLayout tools:context=".MainActivity"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:layout_height="match_parent" android:layout_width="match_parent"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:textAppearance="?android:attr/textAppearanceLarge" android:text="Device Model"
        android:layout_marginTop="165dp" android:layout_centerHorizontal="true"
        android:layout_alignParentTop="true" android:id="@+id/textView1"/>

    <TextView android:layout_height="wrap_content" android:layout_width="wrap_content"
        android:textAppearance="?android:attr/textAppearanceLarge" android:text="Device Name"
        android:layout_centerHorizontal="true" android:id="@+id/textView2"
        android:layout_marginTop="165dp" android:layout_alignParentTop="true"/>

```

```

    android:layout_centerVertical="true" />

    <Button android:layout_height="wrap_content" android:layout_width="wrap_content"
    android:text="Click here to get android mobile phone model programmatically"
    android:layout_marginTop="38dp" android:layout_centerHorizontal="true"
    android:id="@+id/button1" android:layout_below="@+id/textView2" />

</RelativeLayout>

```

- **Set Volume (alarm, ringtone, notification)**

MainActivity.java

```

import android.support.v7.app.AppCompatActivity;
import android.content.Context;
import android.media.AudioManager;
import android.os.Bundle;
import android.widget.SeekBar;

public class MainActivity extends AppCompatActivity {

    SeekBar alarm, mediaPlayer, ringer, notification ;
    AudioManager audioManager;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        alarm = (SeekBar) findViewById(R.id.seekBar1);
        mediaPlayer = (SeekBar) findViewById(R.id.seekBar2);
        ringer = (SeekBar) findViewById(R.id.seekBar3);
        notification = (SeekBar) findViewById(R.id.seekBar4);

        audioManager = (AudioManager) getSystemService(Context.AUDIO_SERVICE);

        alarm.setMax(audioManager.getStreamMaxVolume(AudioManager.STREAM_ALARM));
        mediaPlayer.setMax(audioManager.getStreamMaxVolume(AudioManager.STREAM_MUSIC));
        ringer.setMax(audioManager.getStreamMaxVolume(AudioManager.STREAM_RING));
    }
}

```

```

notification.setMax(audioManager.getStreamMaxVolume(AudioManager.STREAM_NOTIFICATION))
;

alarm.setOnSeekBarChangeListener(new SeekBar.OnSeekBarChangeListener() {

    @Override
    public void onProgressChanged(SeekBar seekBar, int i, boolean b) {

        audioManager.setStreamVolume(AudioManager.STREAM_ALARM, i, 0);
    }

    @Override
    public void onStartTrackingTouch(SeekBar seekBar) {

    }

    @Override
    public void onStopTrackingTouch(SeekBar seekBar) {

    }
});

mediaPlayer.setOnSeekBarChangeListener(new
SeekBar.OnSeekBarChangeListener() {
    @Override
    public void onProgressChanged(SeekBar seekBar, int i, boolean b) {

        audioManager.setStreamVolume(AudioManager.STREAM_MUSIC, i, 0);
    }

    @Override
    public void onStartTrackingTouch(SeekBar seekBar) {

    }

    @Override
    public void onStopTrackingTouch(SeekBar seekBar) {

    }
});

```

```

ringer.setOnSeekBarChangeListener(new SeekBar.OnSeekBarChangeListener() {
    @Override
    public void onProgressChanged(SeekBar seekBar, int i, boolean b) {

        audioManager.setStreamVolume(AudioManager.STREAM_RING, i, 0);
    }

    @Override
    public void onStartTrackingTouch(SeekBar seekBar) {

    }

    @Override
    public void onStopTrackingTouch(SeekBar seekBar) {

    }
});

notification.setOnSeekBarChangeListener(new
SeekBar.OnSeekBarChangeListener() {
    @Override
    public void onProgressChanged(SeekBar seekBar, int i, boolean b) {

        audioManager.setStreamVolume(AudioManager.STREAM_NOTIFICATION, i,
0);
    }

    @Override
    public void onStartTrackingTouch(SeekBar seekBar) {

    }

    @Override
    public void onStopTrackingTouch(SeekBar seekBar) {

    }
});
}
}

```

activity_main.xml

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context=".MainActivity" >

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:text="Set Alarm Volume"
        android:textAppearance="?android:attr/textAppearanceLarge"
        android:layout_marginTop="10dp" />

    <SeekBar
        android:id="@+id/seekBar1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/textView1"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="10dp" />

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/seekBar1"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="10dp"
        android:text="Set Media Player Volume"
        android:textAppearance="?android:attr/textAppearanceLarge" />

    <SeekBar
        android:id="@+id/seekBar2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_alignParentLeft="true"
        android:layout_below="@+id/textView2"

```

```

    android:layout_marginTop="10dp" />

<TextView
    android:id="@+id/textView3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/seekBar2"
    android:layout_centerHorizontal="true"
    android:text="Set Ringer Volume"
    android:textAppearance="?android:attr/textAppearanceLarge"
    android:layout_marginTop="10dp" />

<SeekBar
    android:id="@+id/seekBar3"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_alignParentLeft="true"
    android:layout_centerVertical="true"
    android:layout_marginTop="10dp" />

<TextView
    android:id="@+id/textView4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/seekBar3"
    android:layout_centerHorizontal="true"
    android:text="Set Notification Volume"
    android:textAppearance="?android:attr/textAppearanceLarge"
    android:layout_marginTop="10dp" />

<SeekBar
    android:id="@+id/seekBar4"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_alignParentLeft="true"
    android:layout_below="@+id/textView4"
    android:layout_marginTop="10dp" />

</RelativeLayout>

```

- Intent

MainActivity.java

```
import android.content.Intent;
import android.net.Uri;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.app.Activity;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.provider.MediaStore;
import android.view.View;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        //set click listener to camera button
        findViewById(R.id.btnCamera).setOnClickListener(new View.OnClickListener() {

            //perform camera open action
            @Override
            public void onClick(View v) {

                Intent i = new Intent();
                i.setAction(MediaStore.ACTION_VIDEO_CAPTURE);
                startActivityForResult(i);
            }
        });
        final EditText et = (EditText) findViewById(R.id.etNo);
        //set click listener to Gallery button
        findViewById(R.id.btnGallery).setOnClickListener(new View.OnClickListener() {

            //perform Gallery open action
            @Override
            public void onClick(View v) {
```

```

        Intent i = new Intent();
        i.setAction(Intent.ACTION_VIEW);
        i.setData(Uri.parse("content://media/external/images/media/"));
        startActivity(i);
    }
});

//set click listener to CallLog button
findViewById(R.id.btnCallLog).setOnClickListener(new View.OnClickListener() {

    //perform CallLog open action
    @Override
    public void onClick(View v) {

        Intent i = new Intent();
        i.setAction(Intent.ACTION_VIEW);
        i.setData(Uri.parse("content://call_log/calls/"));
        startActivity(i);
    }

});

//set click listener to Browser button
findViewById(R.id.btnBrowser).setOnClickListener(new View.OnClickListener() {

    //perform Browser open action
    @Override
    public void onClick(View v) {

        Intent i = new Intent();
        i.setAction(Intent.ACTION_VIEW);
        i.setData(Uri.parse("http://www.google.com/"));
        startActivityForResult(Intent.createChooser(i, "Title"));
    }

});

//set click listener to Contact button
findViewById(R.id.btnContact).setOnClickListener(new View.OnClickListener() {

    //perform Contact open action
    @Override
    public void onClick(View v) {

```

```

        Intent i = new Intent();
        i.setAction(Intent.ACTION_VIEW);
        i.setData(Uri.parse("content://contacts/people/"));
        startActivity(i);
    }
});
```

//set click listener to Call button

```

findViewById(R.id.btnCall).setOnClickListener(new View.OnClickListener() {

    //perform Call open action
    @Override
    public void onClick(View v) {

        // AndroidManifest.xml -> Permissions -> Add ->
        // Uses Permission -> android.permission.CALL_PHONE -> Save
        Intent i = new Intent();
        i.setAction(Intent.ACTION_CALL);
        i.setData(Uri.parse("tel:"+et.getText()));
        startActivity(i);
    }
});
```

//set click listener to Dial button

```

findViewById(R.id.btnDial).setOnClickListener(new View.OnClickListener() {

    //perform Dial open action
    @Override
    public void onClick(View v) {

        Intent i = new Intent();
        i.setAction(Intent.ACTION_DIAL);
        i.setData(Uri.parse("tel:"+et.getText()));
        startActivity(i);

        Intent I = new Intent(Intent.ACTION_DIAL, Uri
                .parse("tel:" + et.getText()));
        startActivity(I);
    }
});
```

```
    }  
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
    android:layout_width="fill_parent"  
    android:layout_height="fill_parent"  
    android:background="@android:color/black"  
    android:orientation="vertical" >  
  
    <!-- EDIT TEXT with the hint of "Enter Phone No." -->  
    <EditText  
        android:id="@+id/etNo"  
        android:layout_width="match_parent"  
        android:layout_height="60dp"  
        android:hint="Enter phone no."  
        android:inputType="phone" />  
  
    <!-- BUTTON for the option Call -->  
    <Button  
        android:id="@+id	btnCall"  
        android:layout_width="match_parent"  
        android:layout_height="55dp"  
        android:text="Call" />  
  
    <!-- BUTTON for the option Camera -->  
    <Button  
        android:id="@+id	btnCamera"  
        android:layout_width="match_parent"  
        android:layout_height="55dp"  
        android:text="Camera" />  
  
    <!-- BUTTON for the option Contacts -->  
    <Button  
        android:id="@+id	btnContact"  
        android:layout_width="match_parent"  
        android:layout_height="55dp"  
        android:text="Contact" />  
  
    <!-- BUTTON for the option Browser -->
```

```

<Button
    android:id="@+id	btnBrowser"
    android:layout_width="match_parent"
    android:layout_height="55dp"
    android:text="Browser" />

<!-- BUTTON for the option Call log -->
<Button
    android:id="@+id	btnCallLog"
    android:layout_width="match_parent"
    android:layout_height="55dp"
    android:text="Call Log" />

<!-- BUTTON for the option Gallery -->
<Button
    android:id="@+id	btnGallery"
    android:layout_width="match_parent"
    android:layout_height="55dp"
    android:text="Gallery" />

<!-- BUTTON for the option Dialpad -->
<Button
    android:id="@+id	btnDial"
    android:layout_width="match_parent"
    android:layout_height="55dp"
    android:text="Dialpad" />

</LinearLayout>

```

Android manifest.xml

```

<uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE" />
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
<uses-permission android:name="android.permission.INTERNET"/>
<uses-permission android:name="android.permission.CALL_PHONE"/>
<uses-permission android:name="android.permission.READ_CALL_LOG"/>

```

- How to open pdf file from assets

MainActivity.java

```

import android.content.Intent;
import android.content.res.AssetManager;
import android.net.Uri;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.content.Context;
import android.util.Log;
import java.io.File;
import java.io.IOException;
import java.io.InputStream;
import java.io.OutputStream;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        CopyReadPDFFromAssets();

    }

    private void CopyReadPDFFromAssets() {
        AssetManager assetManager = getAssets();

        InputStream in = null;
        OutputStream out = null;
        File file = new File(getFilesDir(), "006JavaScript.pdf");
        try {
            in = assetManager.open("006JavaScript.pdf");
            out = openFileOutput(file.getName(), Context.MODE_WORLD_READABLE);

            copyPdfFile(in, out);
            in.close();
            in = null;
            out.flush();
            out.close();
            out = null;
        } catch (Exception e) {
            Log.e("exception", e.getMessage());
        }

        Intent intent = new Intent(Intent.ACTION_VIEW);
        intent.setDataAndType(
                Uri.parse("file://" + getFilesDir() + "/006JavaScript.pdf"),

```

```

    "application/pdf");

    startActivity(intent);
}

private void copyPdfFile(InputStream in, OutputStream out) throws IOException {
    byte[] buffer = new byte[1024];
    int read;
    while ((read = in.read(buffer)) != -1) {
        out.write(buffer, 0, read);
    }
}
}

```

Android manifest.xml

```

<uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE"/>
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>

```

You have to create assets folder and place **006JavaScript.pdf** in it

- Expandable list view

MainActivity.java

```

import java.util.ArrayList;
import java.util.HashMap;
import java.util.List;
import java.util.Map;
import android.app.ExpandableListActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.ExpandableListAdapter;
import android.widget.ExpandableListView;
import android.widget.ExpandableListView.OnChildClickListener;
import android.widget.SimpleExpandableListAdapter;
import android.widget.Toast;

public class MainActivity extends ExpandableListActivity {

```

```

private ExpandableListAdapter mAdapter;
ExpandableListView expand;

@Override
public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);

    List<Map<String, String>> groupData = new ArrayList<Map<String, String>>();
    List<List<Map<String, String>>> childData = new ArrayList<List<Map<String,
String>>>();

    /* ***** Start Group **** */
    Map<String, String> curgroupMap1 = new HashMap<String, String>();
    groupData.add(curgroupMap1);
    curgroupMap1.put("parent", "Master 1");

    List<Map<String, String>> children1 =new ArrayList<Map<String, String>>();
    /* *** ChildData ***
     Map<String, String> curChildMap1 = new HashMap<String, String>();
     children1.add(curChildMap1);
     curChildMap1.put("child", "Bank");

    /* *** ChildData ***
     Map<String, String> curChildMap2 = new HashMap<String, String>();
     children1.add(curChildMap2);
     curChildMap2.put("child", "Executive");

    /* *** ChildData ***
     Map<String, String> curChildMap3 = new HashMap<String, String>();
     children1.add(curChildMap3);
     curChildMap3.put("child", "Customer");

    /* ***ChildData ***
     Map<String, String> curChildMap4 = new HashMap<String, String>();
     children1.add(curChildMap4);
     curChildMap4.put("child", "State");

    /* ***ChildData ***
     Map<String, String> curChildMap5 = new HashMap<String, String>();
     children1.add(curChildMap5);
     curChildMap5.put("child", "City");

    childData.add(children1);
}

```

```

/* *****End Group *****

/* ***** Start Group *****
    Map<String, String> curgroupMap2 = new HashMap<String, String>();
    groupData.add(curgroupMap2);
    curgroupMap2.put("parent", "Master 2");
    List<Map<String, String>> children2 =new ArrayList<Map<String, String>>();

/* *** ChildData ***
    Map<String, String> curChildMap6 = new HashMap<String, String>();
    children2.add(curChildMap6);
    curChildMap6.put("child", "Android");

/* *** ChildData ***
    Map<String, String> curChildMap7 = new HashMap<String, String>();
    children2.add(curChildMap7);
    curChildMap7.put("child", "iPhone");

/* *** ChildData ***
    Map<String, String> curChildMap8 = new HashMap<String, String>();
    children2.add(curChildMap8);
    curChildMap8.put("child", "Windows");

    childData.add(children2);

/* *****End Group *****

```



```

mAdapter = new SimpleExpandableListAdapter(
        this,
        groupData,
        android.R.layout.simple_expandable_list_item_1,
        new String[] { "parent" },
        new int[] { android.R.id.text1, android.R.id.text2 },
        childData,
        android.R.layout.simple_expandable_list_item_2,
        new String[] {"child"},
        new int[] { android.R.id.text1 }

);
setListAdapter(mAdapter);

expand = getExpandableListView();

expand.setOnChildClickListener(new OnChildClickListener() {

```

```

@Override
public boolean onChildClick(ExpandableListView parent, View v,
                           int groupPosition, int childPosition, long id)
{
    // TODO Auto-generated method stub

    switch (groupPosition)
    {
        case 0 :
            switch (childPosition)
            {
                case 0 :
                    Toast.makeText(getApplicationContext(), "Bank",
                        Toast.LENGTH_SHORT).show();
                    break;
                case 1:
                    Toast.makeText(getApplicationContext(), "Executive",
                        Toast.LENGTH_SHORT).show();
                    break;
                case 2:
                    Toast.makeText(getApplicationContext(), "Customer",
                        Toast.LENGTH_SHORT).show();
                    break;
                case 3 :
                    Toast.makeText(getApplicationContext(), "State",
                        Toast.LENGTH_SHORT).show();
                    break;
                case 4 :
                    Toast.makeText(getApplicationContext(), "City",
                        Toast.LENGTH_SHORT).show();
                    break;
            }
            break;
        case 1:
            switch (childPosition)
            {
                case 0 :
                    Toast.makeText(getApplicationContext(), "Android",
                        Toast.LENGTH_SHORT).show();
                    break;
                case 1:
                    Toast.makeText(getApplicationContext(), "iPhone",
                        Toast.LENGTH_SHORT).show();
            }
    }
}

```

```

        break;
    case 2:
        Toast.makeText(getApplicationContext(), "Windows",
                Toast.LENGTH_SHORT).show();
        break;
    }
    break;
}

return false;
}
);
}
}
}

```

activity_main.xml

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent" >

</RelativeLayout>

```

Java language is needed to create a dynamic and interactive user interface.

XML language is needed to design the user interface.

Android Manifest.xml file stores essential information about the android application and provides essential information about your app to the Android system, information the system must have before it can run any of the app's code.

- Send EMAIL

MainActivity.java

```

import android.support.v7.app.AppCompatActivity;
import android.net.Uri;

```

```

import android.os.Bundle;
import android.app.Activity;
import android.content.Intent;
import android.view.Menu;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {

    Button Send;
    EditText TO, CC, SUBJECT, MSG;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        Send = (Button) findViewById(R.id.button1);
        TO = (EditText) findViewById(R.id.editText1);
        CC = (EditText) findViewById(R.id.editText2);
        SUBJECT = (EditText) findViewById(R.id.editText3);
        MSG = (EditText) findViewById(R.id.editText4);

        Send.setOnClickListener(new View.OnClickListener() {

            public void onClick(View v) {
                // TODO Auto-generated method stub

                String to = TO.getText().toString();
                String cc = CC.getText().toString();
                String subject = SUBJECT.getText().toString();
                String msg = MSG.getText().toString();

                sendEmail(to, cc, subject, msg);

                TO.setText(null);
                CC.setText(null);
                SUBJECT.setText(null);
                MSG.setText(null);
            }
        });
    }
}

```

```

private void sendEmail(String emailAddresses, String carbonCopies,
                      String subject, String message)
{
    Intent emailIntent = new Intent(Intent.ACTION_SEND);

    emailIntent.setData(Uri.parse("mailto:"));

    String to = emailAddresses;
    String cc = carbonCopies;

    emailIntent.putExtra(Intent.EXTRA_EMAIL, to);
    emailIntent.putExtra(Intent.EXTRA_CC, cc);
    emailIntent.putExtra(Intent.EXTRA_SUBJECT, subject);
    emailIntent.putExtra(Intent.EXTRA_TEXT, message);
    emailIntent.setType("message/rfc822");

    startActivity(Intent.createChooser(emailIntent, "Email"));
}

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    getMenuInflater().inflate(R.menu.menu_main, menu);
    return true;
}
}

```

activity_main.xml

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent" >

    <EditText
        android:id="@+id/editText1"
        android:hint="To"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="50dp"
        android:ems="13"
        android:inputType="textEmailAddress" >

```

```
<requestFocus />
</EditText>

<EditText
    android:id="@+id/editText2"
    android:hint="cc"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentTop="true"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="100dp"
    android:ems="13"
    android:inputType="textEmailAddress" />

<EditText
    android:id="@+id/editText3"
    android:hint="Subject"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentTop="true"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="150dp"
    android:ems="13" />

<EditText
    android:id="@+id/editText4"
    android:hint="Message"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentTop="true"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="200dp"
    android:ems="13"
    android:inputType="textMultiLine" />

<Button
    android:id="@+id/button1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentTop="true"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="280dp"
    android:text="Send E-Mail" />
```

```
</RelativeLayout>
```

Android manifest.xml

```
<uses-permission android:name="android.permission.INTERNET" />
```

- Add Calender Event

MainActivity.java

```
import android.annotation.TargetApi;
import android.os.Build;
import android.support.v7.app.AppCompatActivity;
import java.util.Calendar;
import android.os.Bundle;
import android.app.Activity;
import android.content.Intent;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        Button button = (Button) findViewById(R.id.btn1);
        button.setOnClickListener(new OnClickListener() {

            @Override
            public void onClick(View arg0) {

                //add event to calendar
                addCalendarEvent();
            }
        });
    }
}
```

```

        }

    public void addCalendarEvent() {

        Calendar cal = Calendar.getInstance();
        Intent intent = new Intent(Intent.ACTION_EDIT);
        intent.setType("vnd.android.cursor.item/event");
        intent.putExtra("beginTime", cal.getTimeInMillis());
        intent.putExtra("allDay", true);
        intent.putExtra("rrule", "FREQ=YEARLY");
        intent.putExtra("endTime", cal.getTimeInMillis() + 60 * 60 * 1000);
        intent.putExtra("title", "Test Event");
        intent.putExtra("description", "This is a sample description");
        startActivity(intent);
    }
}

```

activity_main.xml

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context=".MainActivity" >

    <TextView
        android:id="@+id/txt1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Android Calender" />

    <Button
        android:id="@+id/btn1"
        android:layout_below="@+id/txt1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/event" />

```

```
</RelativeLayout>
```

Android manifest.xml

```
<uses-permission android:name="android.permission.WRITE_CALENDAR" />
<uses-permission android:name="android.permission.READ_CALENDAR" />
```

String.xml

```
<string name="event">Add Calender Event</string>
```

- Automatic image slider

MainActivity.java

```
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

activity_main.xml

```
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent" >

    <ViewFlipper
        android:id="@+id/viewflipper"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:autoStart="true"
        android:flipInterval="2000" >
```

```

<ImageView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:src="@drawable/picture1" />

<ImageView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:src="@drawable/picture2" />

<ImageView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:src="@drawable/picture3" />

<ImageView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:src="@drawable/picture4" />

<ImageView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:src="@drawable/picture4" />

</ViewFlipper>

</RelativeLayout>

```

- **AutoRunning of text view (Android)**

```

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:orientation="vertical"
    tools:context=".MainActivity" >

    <TextView
        android:layout_width="wrap_content"

```

```

    android:layout_height="wrap_content"
    android:text="Hello"
    android:textStyle="bold|italic"
    android:layout_gravity="center_horizontal" />

<TextView
    android:id="@+id/shadowtext"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="http://android-er.blogspot.com/"
    android:textStyle="bold"
    android:textSize="50sp"
    android:textColor="#0000ff"

    android:focusable="true"
    android:focusableInTouchMode="true"
    android:singleLine="true"
    android:scrollHorizontally="true"
    android:ellipsize="marquee"
    android:marqueeRepeatLimit ="marquee_forever" />

</LinearLayout>

```

- **Android loan calculator**

MainActivity.java

```

import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import java.text.DecimalFormat;
import android.view.View;
import android.widget.EditText;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    private EditText mLoanAmount, mInterestRate, mLoanPeriod;
    private TextView mMontlyPaymentResult, mTotalPaymentsResult;

    /** Initializes the app when it is first created. */
    @Override

```

```

public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    mLoanAmount = (EditText)findViewById(R.id.loan_amount);
    mInterestRate = (EditText)findViewById(R.id.interest_rate);
    mLoanPeriod = (EditText)findViewById(R.id.loan_period);
    mMontlyPaymentResult = (TextView)findViewById(R.id.monthly_payment_result);
    mTotalPaymentsResult = (TextView)findViewById(R.id.total_payments_result);
}

public void showLoanPayments(View clickedButton) {

    double loanAmount = Integer.parseInt(mLoanAmount.getText().toString());
    double interestRate = (Integer.parseInt(mInterestRate.getText().toString()));
    double loanPeriod = Integer.parseInt(mLoanPeriod.getText().toString());
    double r = interestRate/1200;
    double r1 = Math.pow(r+1,loanPeriod);

    double monthlyPayment = (double) ((r+(r/(r1-1))) * loanAmount);
    double totalPayment = monthlyPayment * loanPeriod;

    mMontlyPaymentResult.setText(new
DecimalFormat("##.##").format(monthlyPayment));
    mTotalPaymentsResult.setText(new DecimalFormat("##.##").format(totalPayment));
}
}
}

```

activity_main.xml

```

<?xml version="1.0" encoding="utf-8"?>
<TableLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:stretchColumns="1"
    android:shrinkColumns="1">
    <TableRow>
        <TextView android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="@string/loan_amount_prompt"
            android:gravity="right"/>
        <EditText android:id="@+id/loan_amount"
            android:inputType="numberDecimal"
            android:layout_height="wrap_content">
            <requestFocus></requestFocus>

```

```

        </EditText>
    </TableRow>
    <TableRow>
        <TextView android:layout_width="wrap_content"
                  android:layout_height="wrap_content"
                  android:text="@string/interest_rate_prompt"
                  android:gravity="right"/>
        <EditText android:id="@+id/interest_rate"
                  android:inputType="numberDecimal"
                  android:layout_height="wrap_content"/>
    </TableRow>
    <TableRow>
        <TextView android:layout_width="wrap_content"
                  android:layout_height="wrap_content"
                  android:text="@string/loan_period_prompt"
                  android:gravity="right"/>
        <EditText android:id="@+id/loan_period"
                  android:inputType="number"
                  android:layout_height="wrap_content"/>
    </TableRow>
    <TableRow>
        <Button android:text="@string/loan_button_text"
                  android:layout_span="2"
                  android:layout_width="match_parent"
                  android:layout_height="wrap_content"
                  android:onClick="showLoanPayments"/>
    </TableRow>
    <TableRow android:layout_marginTop="20dp">
        <TextView android:layout_width="wrap_content"
                  android:layout_height="wrap_content"
                  android:text="@string/monthly_payment_prompt"
                  android:gravity="right"/>
        <TextView android:id="@+id/monthly_payment_result"
                  android:layout_width="wrap_content"
                  android:layout_height="wrap_content"
                  android:textColor="#ff0000"
                  android:gravity="left"/>
    </TableRow>
    <TableRow>
        <TextView android:layout_width="wrap_content"
                  android:layout_height="wrap_content"
                  android:text="@string/total_payments_prompt"
                  android:gravity="right"/>
        <TextView android:id="@+id/total_payments_result"
                  android:layout_width="wrap_content"

```

```

        android:layout_height="wrap_content"
        android:textColor="#ff0000"
        android:gravity="left"/>
    
```

strings.xml

```

<resources>
    <string name="hello_world">Hello world!</string>
    <string name="menu_settings">Settings</string>
    <string name="loan_amount_prompt">Loan amount:&#160;&#160;</string>
    <string name="interest_rate_prompt">Interest rate:&#160;&#160;</string>
    <string name="loan_period_prompt">Months:&#160;&#160;</string>
    <string name="loan_button_text">Calculate Payments</string>
    <string name="monthly_payment_prompt">Monthly payment:&#160;&#160;</string>
    <string name="total_payments_prompt">Total payments:&#160;&#160;</string>
</resources>

```

- How to play music in list view in android

MainActivity.java

```

import android.app.Activity;
import android.media.MediaPlayer;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.ListView;

public class MainActivity extends Activity {

    // variable declaration
    private ListView mainList;
    private MediaPlayer mp;
    private final String[] listContent = { "chimes", "chord", "ding" };

    private final int[] resID = { R.raw.chimes, R.raw.chord, R.raw.ding,

```

```

    };

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

    // Initializing variables
        mp = new MediaPlayer();
        mainList = (ListView) findViewById(R.id.listView1);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
            android.R.layout.simple_list_item_1, listContent);
        mainList.setAdapter(adapter);

        mainList.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> adapterView, View view,
                int position, long id) {
                playSong(position);
            }
        });
    }

    public void playSong(int songIndex) {
    // Play song
        mp.reset(); // stops any current playing song
        mp = MediaPlayer.create(getApplicationContext(), resID[songIndex]); // create's
    // new
    // mediaplayer
    // with
    // song.

        mp.start(); // starting mediaplayer
    }

    @Override
    public void onDestroy() {
        super.onDestroy();
        mp.release();
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {

```

```

// Inflate the menu; this adds items to the action bar if it is present.
        getMenuInflater().inflate(R.menu.menu_main, menu);
        return true;
    }

    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
// Handle action bar item clicks here. The action bar will
// automatically handle clicks on the Home/Up button, so long
// as you specify a parent activity in AndroidManifest.xml.
        int id = item.getItemId();
        if (id == R.id.action_settings) {
            return true;
        }
        return super.onOptionsItemSelected(item);
    }
}

```

activity_main.xml

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.example.audio.MainActivity" >

    <ListView
        android:id="@+id/listView1"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true" >
    </ListView>

</RelativeLayout>

```

raw folder



chimes.mp3



chord.mp3



ding.mp3

- **Change image when we click on buttons in Android**

MainActivity.java

```
import android.os.Bundle;
import android.view.View;
import android.widget.ImageView;
import android.widget.TextView;
import android.app.Activity;

public class MainActivity extends Activity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    //mess method is declared in XML file
    //This function will call when we click on any button
    //and we have to pass View object in this method
    //which will take id of clicked button

    public void mess(View v)
    {
        //initialize image view object
        ImageView im=(ImageView)findViewById(R.id.imageView1);
        //get clicked button id from view object
        switch(v.getId())
        {
            case R.id.button1:
                //if button1 is clicked than set image1
                im.setImageResource(R.drawable.image1);
                break;
            case R.id.button2:
                //if button2 is clicked than set image2
                im.setImageResource(R.drawable.image2);
                break;
        }
    }
}
```

```
    }  
}
```

activity_main.xml

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
    android:layout_width="fill_parent"  
    android:layout_height="fill_parent"  
    android:background="#458"  
    android:orientation="vertical" >  
  
    <ImageView  
        android:id="@+id/imageView1"  
        android:layout_width="200dp"  
        android:layout_height="200dp"  
    />  
  
    <Button  
        android:id="@+id/button1"  
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content"  
        android:textSize="20sp"  
        android:text="First Image "  
        android:onClick="mess"/>  
  
    <Button  
        android:id="@+id/button2"  
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content"  
        android:textSize="20sp"  
        android:text="Second Image"  
        android:onClick="mess"/>  
  
</LinearLayout>
```

- Play music when we click on full screen image in Android

MainActivity.java

```
import android.app.Activity;  
import android.media.MediaPlayer;  
import android.os.Bundle;  
import android.util.Log;  
import android.view.View;  
import android.widget.Button;
```

```

public class MainActivity extends Activity {
    protected static final String TAG = "MainActivity";
    /** Called when the activity is first created. */
    Button meowBtn;
    MediaPlayer mPlayer;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        meowBtn = (Button) findViewById(R.id.button1);
        mPlayer = MediaPlayer.create(MainActivity.this, R.raw.chimes);
        meowBtn.setOnClickListener(new View.OnClickListener() {

            public void onClick(View v) {
                try {
                    mPlayer.start();
                } catch (Exception e) {
                    Log.e(TAG, "error: " + e.getMessage(), e);
                }
            }
        });
    }

    protected void onDestroy() {
        super.onDestroy();
        // TODO Auto-generated method stub
        if (mPlayer != null) {
            mPlayer.release();
            mPlayer = null;
        }
    }
}

```

activity_main.xml

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"

```

```

    android:orientation="vertical" >

    <Button
        android:id="@+id/button1"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:background="@drawable/image1" />

</LinearLayout>

```

- Display of table in XML in Android

activity_main.xml

```

<?xml version="1.0" encoding="utf-8"?>
<TableLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/tableLayout1"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:shrinkColumns="*"
    android:stretchColumns="*" >

    <TableRow
        android:id="@+id/tableRow1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:gravity="center_horizontal" >

        <TextView
            android:id="@+id/textView1"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_span="6"
            android:gravity="center"
            android:text="Weather Report"
            android:textSize="18dp"
            android:textStyle="bold" >
        </TextView>
    </TableRow>

    <TableRow
        android:id="@+id/tableRow2"
        android:layout_width="match_parent"

```

```
    android:layout_height="wrap_content" >

    <TextView
        android:id="@+id/TextView21"
        android:text="" >
    </TextView>

    <TextView
        android:id="@+id/TextView22"
        android:gravity="center"
        android:text="M"
        android:textStyle="bold"
        android:typeface="serif" >
    </TextView>

    <TextView
        android:id="@+id/TextView23"
        android:gravity="center"
        android:text="T"
        android:textStyle="bold"
        android:typeface="serif" >
    </TextView>

    <TextView
        android:id="@+id/TextView24"
        android:gravity="center"
        android:text="W"
        android:textStyle="bold"
        android:typeface="serif" >
    </TextView>

    <TextView
        android:id="@+id/TextView25"
        android:gravity="center"
        android:text="T"
        android:textStyle="bold"
        android:typeface="serif" >
    </TextView>

    <TextView
        android:id="@+id/textView26"
        android:gravity="center"
        android:text="F"
        android:textStyle="bold"
        android:typeface="serif" >
```

```

        </TextView>
    </TableRow>

    <TableRow
        android:id="@+id/tableRow3"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" >

        <TextView
            android:id="@+id/textView31"
            android:text="Day High"
            android:textStyle="bold" >
        </TextView>

        <TextView
            android:id="@+id/textView32"
            android:gravity="center_horizontal"
            android:text="34 °C" >
        </TextView>

        <TextView
            android:id="@+id/textView33"
            android:gravity="center_horizontal"
            android:text="35 °C" >
        </TextView>

        <TextView
            android:id="@+id/textView34"
            android:gravity="center_horizontal"
            android:text="34 °C" >
        </TextView>

        <TextView
            android:id="@+id/textView35"
            android:gravity="center_horizontal"
            android:text="35 °C" >
        </TextView>

        <TextView
            android:id="@+id/textView36"
            android:gravity="center_horizontal"
            android:text="33 °C" >
        </TextView>
    </TableRow>

```

```
<TableRow
    android:id="@+id/tableRow4"
    android:layout_width="match_parent"
    android:layout_height="wrap_content" >

    <TextView
        android:id="@+id/textView41"
        android:text="Day Low"
        android:textStyle="bold" >
    </TextView>

    <TextView
        android:id="@+id/textView42"
        android:gravity="center_horizontal"
        android:text="28 °C" >
    </TextView>

    <TextView
        android:id="@+id/textView43"
        android:gravity="center_horizontal"
        android:text="27 °C" >
    </TextView>

    <TextView
        android:id="@+id/textView44"
        android:gravity="center_horizontal"
        android:text="29 °C" >
    </TextView>

    <TextView
        android:id="@+id/textView45"
        android:gravity="center_horizontal"
        android:text="26 °C" >
    </TextView>

    <TextView
        android:id="@+id/textView46"
        android:gravity="center_horizontal"
        android:text="29 °C" >
    </TextView>
</TableRow>

<TableRow
    android:id="@+id/tableRow5"
    android:layout_width="match_parent"
```

```

    android:layout_height="wrap_content"
    android:gravity="center" >

    <TextView
        android:id="@+id/textView8"
        android:text="Conditions"
        android:textStyle="bold" >
    </TextView>

    <ImageView
        android:id="@+id/imageView1"
        android:src="@drawable/monday" >
    </ImageView>

    <ImageView
        android:id="@+id/imageView2"
        android:src="@drawable/tuesday" >
    </ImageView>

    <ImageView
        android:id="@+id/imageView3"
        android:src="@drawable/wednesday" >
    </ImageView>

    <ImageView
        android:id="@+id/imageView4"
        android:src="@drawable/thursday" >
    </ImageView>

    <ImageView
        android:id="@+id/imageView5"
        android:src="@drawable/friday" >
    </ImageView>
</TableRow>

</TableLayout>

```

- BMI Calculator in Android

MainActivity.java

```
import android.os.Bundle;
```

```

import android.app.Activity;
import android.text.TextUtils;
import android.view.Menu;
import android.view.View;
import android.widget.EditText;
import android.widget.TextView;

public class MainActivity extends Activity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        final EditText e1 = (EditText) findViewById(R.id.et1);
        final EditText e2 = (EditText) findViewById(R.id.et2);
        final TextView tv4 = (TextView) findViewById(R.id.tv4);

        findViewById(R.id.ib1).setOnClickListener(new View.OnClickListener() {

            @Override
            public void onClick(View v) {

                String str1 = e1.getText().toString();
                String str2 = e2.getText().toString();

                if (TextUtils.isEmpty(str1)) {
                    e1.setError("Please enter your weight");
                    e1.requestFocus();
                    return;
                }

                if (TextUtils.isEmpty(str2)) {
                    e2.setError("Please enter your height");
                    e2.requestFocus();
                    return;
                }

                float weight = Float.parseFloat(str1);
                float height = Float.parseFloat(str2) / 100;

                float bmiValue = calculateBMI(weight, height);

                String bmiInterpretation = interpretBMI(bmiValue);
            }
        });
    }
}

```

```

        tv4.setText(String.valueOf(bmiValue + "-" + bmiInterpretation));

    }

});
```

}

```

private float calculateBMI (float weight, float height) {

    return (float) (weight / (height * height));
}

// interpret what BMI means
private String interpretBMI(float bmiValue) {

    if (bmiValue < 16) {
        return "Severely underweight";
    } else if (bmiValue < 18.5) {

        return "Underweight";
    } else if (bmiValue < 25) {

        return "Normal";
    } else if (bmiValue < 30) {

        return "Overweight";
    } else {
        return "Obese";
    }
}
```

}

activity_main.xml

```

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:background="@drawable/green_back"
    android:fadingEdge="horizontal"
```

```
    android:orientation="vertical" >

    <TextView
        android:id="@+id/tv1"
        android:layout_width="124dp"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:paddingLeft="15dp"
        android:paddingTop="40dp"
        android:shadowColor="@android:color/black"
        android:shadowDx="4"
        android:shadowDy="4"
        android:text="BMI"
        android:textAppearance="?android:attr/textAppearanceLarge"
        android:textColor="@android:color/white"
        android:textSize="50sp"
        android:typeface="serif" />

    <TextView
        android:id="@+id/tv2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:text="Calculator"
        android:textColor="@android:color/white"
        android:textSize="20dp"
        android:textStyle="bold" />

    <TextView
        android:id="@+id/tv3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:paddingTop="30dp"
        android:text="WEIGHT (KG)"
        android:textAppearance="?android:attr/textAppearanceMedium"
        android:textColor="@android:color/white"
        android:textStyle="bold|italic"
        android:typeface="serif" />

    <EditText
        android:id="@+id/et1"
        android:layout_width="96dp"
        android:layout_height="wrap_content"
```

```
    android:layout_gravity="center"
    android:hint="IN KGs"
    android:ems="10"
    android:fadingEdgeLength="10dp"
    android:inputType="numberDecimal"
    android:textAlignment="center" >

    <requestFocus />
</EditText>

<TextView
    android:id="@+id/tv3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:paddingTop="30dp"
    android:text="HEIGHT (CM)"
    android:textAppearance="?android:attr/textAppearanceMedium"
    android:textColor="@android:color/white"
    android:textStyle="bold|italic"
    android:typeface="serif" />

<EditText
    android:id="@+id/et2"
    android:layout_width="96dp"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:hint="IN CMs"
    android:ems="10"
    android:inputType="numberDecimal"
    >
</EditText>

<Button
    android:id="@+id/ib1"
    android:layout_width="158dp"
    android:layout_height="51dp"
    android:layout_gravity="center"
    android:layout_marginTop="20dp"
    android:fadingEdge="vertical"
    android:longClickable="true"
    android:nextFocusRight="@color/colorPrimary"
    android:text="Calculate"
    android:visibility="visible" />
```

```

<TextView
    android:id="@+id/tv4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:paddingTop="20dp"
    android:text=""
    android:textSize="20dp"
    android:textStyle="bold"
    android:textColor="@color/colorPrimary"/>

</LinearLayout>

```

colors.xml

```

<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="colorPrimary">#3F51B5</color>
    <color name="colorPrimaryDark">#303F9F</color>
    <color name="colorAccent">#FF4081</color>
</resources>

```

- Check SD Card is present or not in android

MainActivity.java

```

import android.Manifest;
import android.content.pm.PackageManager;
import android.support.v4.content.ContextCompat;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import android.support.v4.app.ActivityCompat;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    Button button ;

```

```

TextView textView;
Boolean SDcard ;
public static final int RequestPermissionCode = 1 ;
int RequestCheckResult ;
boolean RequestTF ;

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    button = (Button) findViewById(R.id.button);
    textView = (TextView) findViewById(R.id.textView);

    button.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {

            PermissionStatus();

            if(RequestTF) {

                SDCardCheck();
            }
            else {

                EnableRuntimePermission();
            }
        }
    });
}

public void SDCardCheck() {

    SDcard =
    android.os.Environment.getExternalStorageState().equals(android.os.Environment.MEDIA_MOUNTED);

    if(SDcard)
    {
        textView.setText("SD CARD IS AVAILABLE");
    }
    else
    {

```

```

        textView.setText("SD CARD NOT AVAILABLE");
    }
}

public void PermissionStatus() {

    RequestCheckResult =
ContextCompat.checkSelfPermission(getApplicationContext(),
Manifest.permission.WRITE_EXTERNAL_STORAGE);

    if (RequestCheckResult == PackageManager.PERMISSION_GRANTED) {

        RequestTF = true;

    } else {

        RequestTF = false;

    }
}

public void EnableRuntimePermission() {

    if (ActivityCompat.shouldShowRequestPermissionRationale(MainActivity.this,
        Manifest.permission.WRITE_EXTERNAL_STORAGE))
    {

        Toast.makeText(MainActivity.this,"WRITE_EXTERNAL_STORAGE permission allows
us to Access SD CARD app", Toast.LENGTH_LONG).show();

    } else {

        ActivityCompat.requestPermissions(MainActivity.this,new String[]{

            Manifest.permission.WRITE_EXTERNAL_STORAGE},
RequestPermissionCode);

    }
}
}

@Override
public void onRequestPermissionsResult(int RC, String per[], int[] PResult) {

    switch (RC) {

```

```

        case RequestPermissionCode:

            if (PResult.length > 0 && PResult[0] ==
PackageManager.PERMISSION_GRANTED) {

                Toast.makeText(MainActivity.this,"Permission Granted, Now your
application can access WRITE_EXTERNAL_STORAGE.", Toast.LENGTH_LONG).show();

            } else {

                Toast.makeText(MainActivity.this,"Permission Canceled, Now your
application cannot access WRITE_EXTERNAL_STORAGE.", Toast.LENGTH_LONG).show();

            }
            break;
        }
    }

}

```

activity_main.xml

```

<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="click here to detect whether the sd card is available or not"
        android:id="@+id/button"
        android:layout_centerVertical="true"
        android:layout_centerHorizontal="true" />

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textAppearance="?android:attr/textAppearanceLarge"
        android:text="SD CARD STATUS"
        android:id="@+id/textView"
        android:layout_above="@+id/button"

```

```

    android:layout_centerHorizontal="true"
    android:layout_marginBottom="38dp"
    android:gravity="center" />

</RelativeLayout>

```

Permission that should be added to **Manifest.xml**

```
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
```

- Get current device language (Detect) in android

MainActivity.java

```

import java.util.Locale;
import android.app.Activity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

public class MainActivity extends Activity {

    String Language;
    Button GetLanguageButton;
    TextView DisplayLanguageTextView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        GetLanguageButton = (Button) findViewById(R.id.button1);

        DisplayLanguageTextView = (TextView) findViewById(R.id.textView1);

        GetLanguageButton.setOnClickListener(new View.OnClickListener() {

            @Override
            public void onClick(View v) {

                Language = Locale.getDefault().getDisplayLanguage().toString();

```

```

        DisplayLanguageTextView.setText(Language);

    }

}) ;

}

}

```

activity_main.xml

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context=".MainActivity" >

    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/textView1"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="22dp"
        android:text="Click here to Get current device language in android
programmatically" />

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="168dp"
        android:text="Default Text"
        android:textAppearance="?android:attr/textAppearanceLarge" />

</RelativeLayout>

```

- Detect battery is charging, not charging, discharge and full and show on screen on button click in android

MainActivity.java

```

import android.app.Activity;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.IntentFilter;
import android.os.BatteryManager;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

public class MainActivity extends Activity {

    TextView textview;
    Button button;
    IntentFilter intentfilter;
    int deviceStatus;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        button = (Button) findViewById(R.id.button1);
        textview = (TextView) findViewById(R.id.textView1);

        intentfilter = new IntentFilter(Intent.ACTION_BATTERY_CHANGED);
    }

    button.setOnClickListener(new View.OnClickListener() {

        @Override
        public void onClick(View v) {
            // TODO Auto-generated method stub
            MainActivity.this.registerReceiver(broadcastreceiver,intentfilter);

        }
    });
}

```

```

}

private BroadcastReceiver broadcastreceiver = new BroadcastReceiver() {
    @Override
    public void onReceive(Context context, Intent intent) {
        deviceStatus = intent.getIntExtra(BatteryManager.EXTRA_STATUS, -1);

        if(deviceStatus == BatteryManager.BATTERY_STATUS_CHARGING) {

            textview.setText("Battery Status = Charging ");

        }

        if(deviceStatus == BatteryManager.BATTERY_STATUS_DISCHARGING) {

            textview.setText("Battery Status = Discharging ");

        }

        if (deviceStatus == BatteryManager.BATTERY_STATUS_FULL) {

            textview.setText("Battery Status = Battery Full ");

        }

        if(deviceStatus == BatteryManager.BATTERY_STATUS_UNKNOWN) {

            textview.setText("Battery Status = Unknown ");

        }

        if (deviceStatus == BatteryManager.BATTERY_STATUS_NOT_CHARGING) {

            textview.setText("Battery Status = Not Charging ");

        }

    }
};

}

```

activity_main.xml

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context=".MainActivity" >

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true"
        android:text="Status"
        android:textAppearance="?android:attr/textAppearanceLarge" />

    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/textView1"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="16dp"
        android:text="Click here to Get battery status in android programmatically" />

</RelativeLayout>

```

- **Battery Health in android**

MainActivity.java

```

import android.app.Activity;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.IntentFilter;
import android.os.BatteryManager;
import android.os.Bundle;

```

```

import android.view.View;
import android.widget.Button;
import android.widget.TextView;

public class MainActivity extends Activity {

    TextView textview;
    Button button;
    Context context;
    IntentFilter intentfilter;
    int status;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        textview = (TextView) findViewById(R.id.textView1);
        button = (Button) findViewById(R.id.button1);

        intentfilter = new IntentFilter(Intent.ACTION_BATTERY_CHANGED);
    }

    button.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            // TODO Auto-generated method stub
            MainActivity.this.registerReceiver(broadcastreceiver,intentfilter);
        }
    });
}

BroadcastReceiver broadcastreceiver = new BroadcastReceiver() {
    @Override
    public void onReceive(Context context, Intent intent) {
        status = intent.getIntExtra(BatteryManager.EXTRA_HEALTH,0);

        if(status == BatteryManager.BATTERY_HEALTH_COLD) {
            textview.setText("Battery health = Cold");
        }
        if (status == BatteryManager.BATTERY_HEALTH_DEAD) {
    }
}

```

```

        textview.setText("Battery health = Dead");

    }

    if (status == BatteryManager.BATTERY_HEALTH_GOOD) {

        textview.setText("Battery health = Good");

    }

    if (status == BatteryManager.BATTERY_HEALTH_OVERHEAT) {

        textview.setText("Battery health = Over Heat");

    }

    if (status == BatteryManager.BATTERY_HEALTH_OVER_VOLTAGE) {

        textview.setText("Battery health = Over Voltage");

    }

    if(status == BatteryManager.BATTERY_HEALTH_UNKNOWN) {

        textview.setText("Battery health = Unknown");

    }

    if(status == BatteryManager.BATTERY_HEALTH_UNSPECIFIED_FAILURE) {

        textview.setText("Battery health = Unspecified failure");

    }

}

}

};

}

}

```

activity_main.xml

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"

```

```

tools:context=".MainActivity" >

<TextView
    android:id="@+id/textView1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentTop="true"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="184dp"
    android:text="Battery health"
    android:textAppearance="?android:attr/textAppearanceLarge" />

<Button
    android:id="@+id/button1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/textView1"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="17dp"
    android:text="Click here to Check/Get battery health in android
programmatically" />

</RelativeLayout>

```

- Get screen dimensions in pixels in android

MainActivity.java

```

import android.app.Activity;
import android.content.Context;
import android.os.Bundle;
import android.util.DisplayMetrics;
import android.view.WindowManager;
import android.widget.TextView;

public class MainActivity extends Activity {

    TextView one,two;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}

```

```

    one = (TextView) findViewById(R.id.textView2);
    two = (TextView) findViewById(R.id.textView4);

    DisplayMetrics displayMetrics = new DisplayMetrics();
    WindowManager windowManager = (WindowManager)
getApplicationContext().getSystemService(Context.WINDOW_SERVICE);
    windowManager.getDefaultDisplay().getMetrics(displayMetrics);
    int deviceWidth = displayMetrics.widthPixels;
    int deviceHeight = displayMetrics.heightPixels;

    one.setText(String.valueOf(deviceWidth));
    two.setText(String.valueOf(deviceHeight));

}
}

```

activity_main.xml

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context=".MainActivity" >

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/textView1"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="16dp"
        android:text="Large Text"
        android:textAppearance="?android:attr/textAppearanceLarge" />

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"

```

```

        android:layout_centerHorizontal="true"
        android:layout_marginTop="176dp"
        android:text="Width in Pixels"
        android:textAppearance="?android:attr/textAppearanceLarge" />

<TextView
    android:id="@+id/textView3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignRight="@+id/textView1"
    android:layout_below="@+id/textView2"
    android:layout_marginTop="24dp"
    android:text="Height in Pixels"
    android:textAppearance="?android:attr/textAppearanceLarge" />

<TextView
    android:id="@+id/textView4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignLeft="@+id/textView2"
    android:layout_below="@+id/textView3"
    android:layout_marginTop="16dp"
    android:text="Large Text"
    android:textAppearance="?android:attr/textAppearanceLarge" />

</RelativeLayout>

```

- Print © android .com in android

activity_main.xml

```

<TextView
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="\u00A9 2016 android.blogspot.in"
    android:textSize="25dp" />

```

- **How to parse xml file in Assert folder in Android using Dom Parser**

MainActivity.java

```

import android.os.Bundle;
import java.io.InputStream;
import javax.xml.parsers.DocumentBuilder;
import javax.xml.parsers.DocumentBuilderFactory;
import org.w3c.dom.Document;
import org.w3c.dom.Element;
import org.w3c.dom.Node;
import org.w3c.dom.NodeList;
import android.app.Activity;
import android.widget.TextView;

public class MainActivity extends Activity {
    TextView textView;
    InputStream inputStream;
    DocumentBuilderFactory dbFactory;
    DocumentBuilder docBuilder;
    Document doc;
    Element element;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        textView = (TextView) findViewById(R.id.textView1);
        try {
            inputStream = getAssets().open("employeesdetails.xml");

            dbFactory = DocumentBuilderFactory.newInstance();
            docBuilder = dbFactory.newDocumentBuilder();
            doc = docBuilder.parse(inputStream);

            element = doc.getDocumentElement();
            element.normalize();

            NodeList nList = doc.getElementsByTagName("employee");
            for (int i = 0; i < nList.getLength(); i++) {

                Node node = nList.item(i);
                if (node.getNodeType() == Node.ELEMENT_NODE) {
                    Element element2 = (Element) node;
                    textView.setText(textView.getText() + "\nEmployee Id : "
                            + getValuefromTagName("employee_id", element2) + "\n");
                    textView.setText(textView.getText() + "Employee Name : "
                            + getValuefromTagName("employee_name", element2) + "\n");
                    textView.setText(textView.getText() + "Employee Salary: "
                            + getValuefromTagName("employee_salary", element2) +
                            "\n");
                    textView.setText(textView.getText()
                            + "=====");
                }
            }
        }
    }
}

```

```

        } catch (Exception e) {
            e.printStackTrace();
        }

    }

private static String getValuefromTagName(String tag, Element element) {
    NodeList nodeList = element.getElementsByTagName(tag).item(0)
        .getChildNodes();
    Node node = (Node) nodeList.item(0);
    return node.getNodeValue();
}

}

```

activity_main.xml

```

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity" >

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentLeft="true"
        android:layout_alignParentTop="true"
        android:layout_marginLeft="86dp"
        android:layout_marginTop="77dp"
        android:text="TextView" />

</RelativeLayout>

```

New → folder → assets folder

employeesdetails.xml (assets folder)

```

<?xml version="1.0"?>
<employee_list>
    <employee>
        <employee_id>1001</employee_id>
        <employee_name>Android </employee_name>
        <employee_salary>50000</employee_salary>
    </employee>
    <employee>
        <employee_id>1002</employee_id>
        <employee_name>Surya </employee_name>
        <employee_salary>60000</employee_salary>
    </employee>
    <employee>
        <employee_id>1003</employee_id>
        <employee_name>Narayana </employee_name>
        <employee_salary>40000</employee_salary>
    </employee>
</employee_list>

```

```
</employee_list>
```

- **StrikeText View in Android**

MainActivity.java

```
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.text.SpannableString;
import android.text.Spanned;
import android.text.style.StrikethroughSpan;
import android.view.Menu;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        SpannableString Strickstr = new SpannableString("Albert Einstein");
        Strickstr.setSpan(new StrikethroughSpan(), 0, Strickstr.length(),
        Spanned.SPAN_PARAGRAPH);
        TextView StrickstrTv = (TextView) findViewById(R.id.striketxt);
        StrickstrTv.setText(Strickstr);

    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the action bar if it is present.
        getMenuInflater().inflate(R.menu.menu_main, menu);
        return true;
    }

}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="vertical" >

    <TextView
        android:id="@+id/striketxt"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
```

```
    android:text=""
    android:textSize="25px" />

</LinearLayout>
```

- **Underline TextView in Android**

MainActivity.java

```
import android.os.Bundle;

import android.support.v7.app.AppCompatActivity;

import android.text.SpannableString;

import android.text.Spanned;

import android.text.style.UnderlineSpan;

import android.view.Menu;

import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        SpannableString str = new SpannableString("Steve Jobs");

        str.setSpan(new UnderlineSpan(), 0, str.length(),

                    Spanned.SPAN_PARAGRAPH);

        TextView txtView = (TextView) findViewById(R.id.underlinetxt);

        txtView.setText(str);

    }

    @Override

    public boolean onCreateOptionsMenu(Menu menu) {

        // Inflate the menu; this adds items to the action bar if it is present.
```

```

        getMenuInflater().inflate(R.menu.menu_main, menu);

        return true;
    }

}

```

activity_main.xml

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="vertical" >

    <TextView
        android:id="@+id/underlinetxt"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text=""
        android:textSize="25px" />

</LinearLayout>

```

- **Slideshow with next and prev buttons in Android**

MainActivity.java

```

import android.support.v7.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.ViewFlipper;

public class MainActivity extends AppCompatActivity implements View.OnClickListener {

    ViewFlipper viewFlipper;

    Button next;

    Button previous;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

```

```

        viewFlipper = (ViewFlipper) findViewById(R.id.viewFlipper);

        next = (Button) findViewById(R.id.next);

        previous = (Button) findViewById(R.id.previous);

        next.setOnClickListener(this);

        previous.setOnClickListener(this);

    }

@Override

public void onClick(View v) {

    if (v == next) {

        viewFlipper.showNext();

    }

    else if (v == previous) {

        viewFlipper.showPrevious();

    }

}

```

activity_main.xml

```

<?xml version="1.0" encoding="utf-8" ?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <ViewFlipper
        android:layout_width="fill_parent"
        android:layout_height="fill_parent"
        android:id="@+id/viewFlipper">
        <ImageView
            android:layout_width="fill_parent"
            android:layout_height="fill_parent"
            android:scaleType="fitXY"
            android:id="@+id/imageView"

```

```
    android:src="@drawable/picture1"/>
<ImageView
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:scaleType="fitXY"
    android:id="@+id/imageView2"
    android:src="@drawable/picture2"/>
<ImageView
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:scaleType="fitXY"
    android:id="@+id/imageView3"
    android:src="@drawable/picture3"/>
<ImageView
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:scaleType="fitXY"
    android:id="@+id/imageView4"
    android:src="@drawable/picture4"/>
<ImageView
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:scaleType="fitXY"
    android:id="@+id/imageView5"
    android:src="@drawable/picture5"/>
<ImageView
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:scaleType="fitXY"
    android:id="@+id/imageView6"
    android:src="@drawable/picture1"/>
<ImageView
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:scaleType="fitXY"
    android:id="@+id/imageView7"
    android:src="@drawable/picture2"/>
<ImageView
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:scaleType="fitXY"
    android:id="@+id/imageView8"
    android:src="@drawable/picture3"/>
<ImageView
    android:layout_width="fill_parent"
```

```

        android:layout_height="fill_parent"
        android:scaleType="fitXY"
        android:id="@+id/imageView9"
        android:src="@drawable/picture4"/>
<ImageView
        android:layout_width="fill_parent"
        android:layout_height="fill_parent"
        android:scaleType="fitXY"
        android:id="@+id/imageView10"
        android:src="@drawable/picture4"/>
<ImageView
        android:layout_width="fill_parent"
        android:layout_height="fill_parent"
        android:scaleType="fitXY"
        android:id="@+id/imageView11"
        android:src="@drawable/picture5"/>
<ImageView
        android:layout_width="fill_parent"
        android:layout_height="fill_parent"
        android:scaleType="fitXY"
        android:id="@+id/imageView12"
        android:src="@drawable/picture1"/>
</ViewFlipper>
<Button
        android:id="@+id/next"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Next"
        android:layout_alignParentBottom="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentEnd="true"/>
<Button
        android:id="@+id/previous"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Prev"
        android:layout_alignParentLeft="true"
        android:layout_alignParentStart="true"
        android:layout_alignParentBottom="true"
        android:layout_alignTop="@+id/next"/>
</RelativeLayout>
```

Kotlin versus Java

	Kotlin	Java
Compilation time	Slow	Pretty fast
Null safety	Yes	No
Development speed	Fast	Faster than Kotlin
Lambda expression	Yes	No
Community support	Limited	Very large

Exceptions → indicate a problem in your code during its execution.

- **ArithmaticException** → which is thrown when you divide a number by zero.
- **ArrayIndexOutOfBoundsException** → which is thrown when an array has been accessed with an illegal index.
- **SecurityException** → which is thrown by the security manager to indicate a security violation.
- **NullPointerException** → which is thrown when you invoke a method or property on a null object.

Unit	Description	
dp	Density Independent Pixel	1dp is equivalent to one pixel on a 160dpi screen.
sp	Scale Independent Pixel.	This is very similar to dp but just that this is recommended for specifying font sizes.
pt	Point.	A point is defined to be 1/72 of an inch.
px	Pixel.	Corresponds to actual pixels on the screen

Method	Description
onStartCommand()	<ul style="list-style-type: none"> This method is called when any other component, like say an activity, requests the service to be started, by calling startService(). It is your responsibility to stop the service when the corresponding work is done by using stopSelf() or stopService() methods.
onBind()	<ul style="list-style-type: none"> Calls this method when another component wants to bind with the service by calling bindService(). To implement this, you must provide an interface that clients use in order to communicate with the service. It returns an IBinder object. If you don't want to allow binding, then return null.
onUnbind()	The system calls this method when all clients are disconnected from a particular interface published by the service.
onRebind()	Calls this method when new clients are connected to the service after it had previously been notified that all are disconnected in onUnbind(Intent) .
onCreate()	The system calls this method when the service is created first using onStartCommand() or onBind() . It is required to perform a one-time set-up.
onDestroy()	This method is called when the service is no longer used and is being destroyed. Your service should implement this in order to clean up any resources such as threads, registered listeners, receivers, etc.

Android versus iOS

	Android	iOS
Development Complexity	High	Low
Cost	Costs more due to higher testing period	Costs less
Programming language	Java and Kotlin	Require Objective C or Swift for Native development
Security	Not very secure	Highly secured
Speed	Faster mean download	Much faster than Android

Android Name	Version	Year of Release
Android 1.5	Android Cupcake	2009
1.6	Donut	2009
2.0-2.1	Eclair	2009
2.2 – 2.2.3	Froyo	2010
2.3 – 2.3.7	Gingerbread	2010
3.0 – 3.2.6	Honeycomb	2011
4.0 – 4.0.4	Ice Cream Sandwich	2011
4.1 – 4.3.1	Jelly Bean	2012
4.4 – 4.4.4	KitKat	2013
5.0 – 5.1.1	Lollipop	2014
6.0 – 6.0.1	Marshmallow	2015
7.0 – 7.1.2	Nougat	2016
8.0 – 8.1	Oreo	2017
9.0	Pie	2018



Linus Benedict Torvalds is a Finnish-American software engineer who is the creator and, historically, the main developer of the Linux kernel, used by Linux distributions and other operating systems such as Android and Chrome OS.

Source of information:

- <https://www.wikipedia.org/>
- <https://www.google.com/>